THE UNEP

BIODIVERSITY

PROGRAMME AND IMPLEMENTATION STRATEGY

A Framework for Supporting Global Conservation and Sustainable Use of Biodiversity

August 1995

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THE UNEP BIODIVERSITY PROGRAMME AND IMPLEMENTATION STRATEGY (BPIS)

INTRODUCTION

Biodiversity, the product of millions of years of biological evolution, has always provided mankind with food, fibre, shelter, medicines and socio-cultural enrichment. Yet we are destroying vast numbers of invaluable species and genetic combinations and compromising vital terrestrial and aquatic habitats and ecosystems at a time when human dependence on genetic resources and ecological services of ecosystems is increasing rapidly due to human population growth. The rate of genetic erosion is quite incompatible with not only the desired human dignity and material welfare but, more importantly, with the integrity of the biosphere and planet Earth.

It is quite clear that sustainable economic use of these genetic assets and other natural resources will depend on (or it may indeed demand) fundamental changes in the way humans choose to interact with each other and with other species co-habiting planet Earth. Such changes call for a major recasting of political principles and covenants/contracts governing international co-operation, production and consumption patterns, exchange of commodities and information, as well as transfer of technologies including biotechnology. It calls for charting a new path, with a new vision, vigour and renewed mandate. It calls for an effective implementation strategy. This is the message conveyed in Chapter 1 of this document (BPIS).

It will not be feasible to conserve biodiversity or use it sustainably while global poverty and inequity are rampant in regions of the world naturally endowed with abundant biodiversity, namely the South. These twin problems of poverty and inequity must be diligently addressed and dealt with equitably in order to gain the full support of the people in developing countries where biodiversity abounds.

Appropriate conditions must be nurtured and capacities installed particularly in these developing countries so that science the technology can be fully harnessed to further the objectives of Agenda 21 and the Convention on Biological Diversity in all respects but more so in terms of economic, social and ecological well being, that would directly benefit the local/indigenous people and minimize further biological and genetic erosion of ecosystems and impoverishment of the people. In other words, the mission and objectives of biodiversity programmes and their focus must be on well identified priority needs in order to achieve appreciable results by the turn of this century as envisaged in Chapter 2 of this Biodiversity Programme and Implementation Strategy (BPIS). In essence, it means that current perverse economic and demographic trends and policies that are the root causes of rampant habitat destruction and ecosystem fragmentation must be halted to avert the vicious circle of creating new poverty and more inequality. The unsustainable exploitation of genetic resources, the unregulated introduction of alien/invasive species or organisms with novel traits, the pollution of water-courses and the atmosphere – all these adverse activities that are likely to cause undesirable changes in the environment – must be approached with extreme caution.

In Chapter 3, we draw the attention of policy makers, administrators, managers and scientists as well as the general public at national, regional and global levels to seven closely-linked programme areas of focus. It is our conviction that these would propel UNEP towards assisting countries to achieve expected desirable goals in an environmentally sound manner. Mention is therein made of the need for appropriate legal frameworks, biotechnology development and biosafety measures, attendant capacity-building and human resources development requirements in all fields relevant to biodiversity conservation and sustainable use of biological resources.

As part of the implementation strategy for effective conservation and sustainable use of genetic resources,

habitats and ecosystems, it is important to stress that everybody at whatever station or status in life has a responsibility to maintain (and enhance) the integrity of our planet. Support to the implementation of the Convention on Biological Diversity is of paramount importance and more so when it is seen in the broader framework of not only other biodiversity-related conventions (CITES, CMS, RAMSAR) but also other international Conventions and trade agreements that deal with global poverty, such as the UN Framework Convention on Climate Change and the UN Convention to Combat Desertification.

The implementation strategy adopted in this document, it is hoped, will help stem the tide of extinctions of invaluable species and destruction of their habitats through unwarranted activities or inaction on certain critical fronts. It is our conviction that most of the major concepts of ecology have been incorporated herein and have emphasized the importance of biodiversity to the resilience of ecosystems and hence to the survival of humankind.

The importance of activities envisaged under the UNEP Biodiversity Programme and Implementation Strategy (BPIS) cannot be over-emphasized. However, mobilisation of adequate financial resources to implement the activities is a veritable challenge. It follows, therefore, that the full-fledged implementation of the programmes in this document would naturally depend on availability of the requisite financial, technical, human and other resources. This calls for the co-operation and contribution of other relevant UN entities, inter-governmental and non-governmental organisations as well as the entire international community in a well co-ordinated manner to meet the challenge.

E. Dowdeswell

Elizabeth Dowdeswell
Executive Director

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ABBREVIATIONS

ACTS	African Centre for Technology Studies
AWB	Asian Wetland Bureau
BDM	Biodiversity Data Management project
BDT	Tropical Data Base (Base de Dados Tropical) in Brazil
BIN21	Biodiversity Information Network 21
BINAS	Biosafety Network and Advisory Service
BPIS	Biodiversity Programme and Implementation Strategy of UNEP
CAFF	Committee on Arctic Flora and Fauna
CBD	Convention on Biological Diversity
CCAD	Central American Commission on Environment and Development
CGIAR	Consultative Group on International Agricultural Research
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CMC	Centre for Marine Conservation
CNPPA	Commission on National Parks and Protected Areas of IUCN
COP	Conference of the Parites
CPAS	Corporate Planning and Accountability Service of UNEP
CPR	Committee of Permanent Representatives to UNEP
CSD	Commission on Sustainable Development of the United Nations
CSERGE	Centre for Social and Economic Research on the Global Environment
DAD	Domestic Animal Diversity
DPCSD	Department for Policy Coordination and Sustainable Development of the United Nations
ECG	Ecosystems Conservation Group
ELI/PAC	Environmental Legislation and Institutions Programme Activity Centre of UNEP
ENRIN	Environmental and Natural Resource Information Networks Programme of UNEP
EU	European Union
FAO	Food and Agricultural Organization of the United Nations
GATT	General Agreements on Tariffs and Trade
GBA	Global Biodiversity Assessment
GBF	Global Biodiversity Forum
GEF	Global Environmental Facility
GIS	Geographic information system
GMOs	Genetically Modified Organisms
GRID	Global Resource Information Database of UNEP
IACSD	Inter-Agency Committee on Sustainable Development
ICBP	International Council for Bird Preservation
ICGEB	International Centre for Genetic Engineering and Biotechnology
ICRI	International Coral Reef Initiative
ICSU	International Council of Scientific Unions
IFAW	International Fund for Animal Welfare
IGO	Intergovernmental Organization
IICA	Interamerican Institute for Agricultural Cooperation
INC	Intergovernmental Negotiating Committee for a Convention on Biological Diversity
INPE	Instituto Nacional de Pesquizas Espacias, Brazil
IOC	Intergovernmental Oceanographic Commission
IPGRI	International Plant Genetic Resources Institute
IRRO	Information Resource on the Release of Organisms into the Environment
ISTAC	Interim Scientific and Technical Advisory Committee of the Caribbean SPAW
ITTO	International Timber Trade Organization
IUBS	International Union of Biological Sciences

IUCN	World Conservation Union
IUMS	International Union of Microbiology Societies
IWC	International Whaling Commission
MIRCENs	Microbiological Resources Centres
MMAP	Global Plan of Action for the Conservation, Management and Utilization of Marine Mammals
MSDN	International Microbial Strain Data Network
MWT	Mpala Wildlife Trust
NBUs	National Biodiversity Units of the Country Biodiversity Studies
OAS	Organization of American States
OCA/PAC	UNEP's Oceans and Coastal Areas Programme Activity Centre
OECD	Organization for Economic Cooperation and Development
RAC/SPAW	SPAW Regional Activity Centre
ROLAC	UNEP's Regional Office for Latin America and the Caribbean
SCOPE	Scientific Committee on Problems of the Environment of ICSU
SI-A-PAZ	System of Protected Areas for Peace (Costa Rica-Nicaragua)
SIDS	Small Island Developing States
SPAW	Regional Seas Protocols concerning Specially Protected Areas and Wildlife
SSC	IUCN's Species Survival Commission
STAP	Scientific and Technical Advisory Panel of GEF
STRI	Smithsonian Tropical Research Institute
TRIPs	Trade Related Aspects of Intellectual Property Rights
UNCED	United Nations Conference on Environment and Development
UNCTAD	United Nations Conference on Trade and Development
UNEP	United Nations Environment Programme
UNEPCOM	Russian Commission for UNEP
UNESCO	United Nations, Educational, Scientific and Cultural Organization
UNIDO	United Nations Industrial Development Organization
USAID	United States Agency for International Development
WA	Wetlands for the Americas
WCGALP	World Congress on Genetics Applied to Livestock Production
WCMC	World Conservation Monitoring Centre
WDC	World Data Centre on Microorganisms
WFCC	World Federation of Culture Collections
WHO	World Health Organization
WRI	World Resources Institute
WTO	World Trade Organization
WWF	World Wide Fund for Nature

POLICY-MAKERS SUMMARY

Introduction

The Biodiversity Programme and Implementation Strategy (BPIS) is a flagship activity of the United Nations Environment Programme (UNEP). It is the first major result of the efforts to refocus UNEP's activities and to concentrate its energies in leveraging global, regional and national action to conserve the environment and promote the sustainable use of natural resources. The BPIS is a multidisciplinary, multi-sectoral approach to the integrated management and sustainable utilization of biodiversity in oceans and coastal areas, freshwater ecosystems and terrestrial ecosystems.

The BPIS takes into account the strong linkages between Agenda 21 and the Convention on Biological Diversity (CBD). The provisions of the latter are reinforced by Chapter 15 and 16 of Agenda 21 which stress the value of biological resources as a capital asset with great potential for yielding sustainable benefits at the country level and the importance of biotechnology in development. Chapter 15 of Agenda 21 emphasizes the need to build capacities for the assessment, evaluation and monitoring of biodiversity at the national level, while ensuring the full participation of, and support to, local communities. It also calls for support for the preparation of country studies, with particular reference to costs, benefits and socio-economic issues relevant to effective biodiversity conservation and sustainable use of biological resources. This call complements the provisions of the CBD which relate to the preparation of biodiversity strategies and actions plans are prerequisites for policy formulation.

Strengthening the scientific basis for action is crucial in ensuring that capacity building and investment projects in the field of biodiversity are implemented in an efficient and cost-effective manner. UNEP will

strengthen its activities in generating and leveraging knowledge on biodiversity management by mobilizing scientific and technical expertise. To achieve this, stronger partnerships will be forged with centres of excellence in the developed and developing countries. Knowledge will be generated and collected through scientific and technical assessments, targeted research and the development of conceptual frameworks for policy formulation. The knowledge will be widely disseminated to support countries in implementing Agenda 21 and the CBD as well as for the design of strategies for implementing projects funded by the Global Environment Facility (GEF).

Mission and objectives

The mission of the BPIS is to contribute to the conservation, sustainable use and the fair and equitable distribution of the benefits from the use of genetic resources. This mission will be pursued to promote sustainable development. The general objective of the programme is to catalyze global, regional, sub-regional and national actions in support of Agenda 21 and the CBD. The BPIS provides the framework for UNEP support to the implementation of Agenda 21 in the fields of biodiversity and biotechnology, the CBD and other relevant international conventions. It also contributes to the design and implementation of operational strategies for the GEF. The BPIS builds previous global efforts to conserve the world's living resources.

More specifically, the BPIS aims to: (a) carry out research, assessment and monitoring; (b) build scientific and political consensus; (c) assist Governments in the formulation and implementation of agreements, policy frameworks and options, strategies, actions and plans; (d) promote the integration of biodiversity conservation elements in regional, sub-regional and national action plans for sustainable development; (e) build and strengthen the capacity of developing countries and their national institutions; (f) encourage the active involvement of all levels of society, especially local communities, major groups, and non-governmental organizations (NGOs) in contributing to the sound management and sustainable use of biodiversity with particular emphasis on the role of women, and (g) raise public awareness and disseminate information on biodiversity issues

Programme areas and priority needs

Actions for meeting the priority needs and objectives of the BPIS and propelling UNEP towards the expected results will be carried out in the following seven areas: (a) the policy and legal framework (support to the CBD and other relevant international legal instruments); (b) biodiversity assessment, research and monitoring; (c) biodiversity and economics (biodiversity and trade, economic policy instruments for biodiversity management, fair and equitable sharing of benefits from the use of biodiversity resources); (d) biotechnology issues, with special attention on biosafety; (e) *in situ* and *ex situ* management of biodiversity (marine, freshwater, terrestrial, and microbiological and genetic resources); (f) targeted capacity building and human resource development, and (g) public awareness and information.

Legal framework for biodiversity conservation and sustainable use

In helping to develop the legal framework for biodiversity conservation and sustainable use, UNEP will undertake a number of key activities such as supporting the implementation of the Convention on Biological Diversity (CBD), assisting in the implementation of other relevant international instruments and furthering biodiversity-related international environmental law.

UNEP is hosts Secretariat of the CBD and is committed to giving its fullest support to the CBD's successful implementation. To this end, it will fully cooperate and coordinate with the COP and all relevant UN agencies. The CBD will benefit from its association with UNEP for a number of reasons: (a) UNEP is in a position to deal with global, complex and cross sectoral environmental issues in a comprehensive and holistic manner. It will therefore promote the implementation of the objectives of the CBD by making use of a wealth of in-house resources and expertise; (b) in light of UNEP's coordinating functions, the

COP will benefit from the experiences of other convention secretariats and increased complementarity and integration of activities in related areas, and; (c) the CBD will benefit from UNEP's mandate to further develop international environmental law.

UNEP is undertaking a comparative study of implementation mechanisms on the basis of practical experience and information provided by the secretariats of UNEP-administered conventions with a view to enhancing implementation mechanisms of international environmental law. This study will assist UNEP to improve its secretariat functions.

Support to the Secretariat will be provided in the form of technical inputs in the work of the secretariat, administrative support systems, data and information services, conference services and temporary cash advances. UNEP maintains close links with and provides support to WCMC which provides data management support to some of the above conventions.

The Secretariat will be functionally independent and will be guided by the policies set out by the COP. However, it will work closely with UNEP at the practical level. This relationship will be established and regulated by appropriate organizational and administrative arrangements agreed upon by the COP. A politically and legally distinct Secretariat but one that works closely with UNEP provides for the most cost effective operation of the Secretariat and implementation of the CBD.

BOX 1. Meeting priority needs

To achieve the objectives of the BPIS, the most effective way is through actions that address priority needs in the field of biodiversity. The BPIS has been structured to focus on the following priority needs:

- strengthening the implementation of existing international agreements related to biodiversity conservation, particularly the CBD which is in its initial stage of implementation
- assisting Governments to incorporate the conservation and sustainable use of biodiversity into nationl policy frameworks
- enhancing the performance of GEF in funding priority biodiversity conservation and sustainable use projects at the global, regional, sub-regional and national levels
- improving support to biodiversity research, assessment, data management and monitoring at the global, regional, sub-regional and national levels in support of biodiversity decision-making and management
- promoting actions at the global level that provide benefits to all countries in managing their own biodiversity
- strengthening the management of ecosystems and habitats containing a disproportionately high share of the world's terrestrial, freshwater and marine biodiversity
- strengthening the capacity of developing countries and their national institutions in the management and sustainable use of their biodiversity
- assisting developing countries with specially vulnerable ecosystems, particularly those that are predominantly arid and semi-arid and Small Island Developing States (SIDS), in the conservation and management of their biodiversity, taking into account the distinctive kinds of problems which they face
- assisting Governments of developing countries in addressing issues of biodiversity and economics in areas such as trade, transfer and development of technology and economic policy instruments
- developing and promoting concrete examples of sustainable use of biodiversity through pilot projects involving the participation of local communities, groups and NGOs with specific emphasis on the role of women, and
- expanding outreach activities and public information on biodiversity by strengthening the global, regional and national networks involving major groups, NGOs and the media.

UNEP will initiate regional legal training programmes in support of the CBD. These will include: (a) identification of options on how to integrate the provisions of the CBD into national legislation; (b) an analysis of the benefit of being a party, for those considering ratification; (c) an examination of the legal implications of the CBD at the domestic level, for those that are contracting parties; and (d) an analysis of the relationship between the CBD and other global and regional agreements to which Governments might be a party. At the domestic level, if so requested, Governments on a case by case basis will be advised on national legal provisions which should be considered in determining how obligations under the treaty can be met.

UNEP will also support the strengthening of environmental legislation infrastructures in selected regional, sub-regional and national centres of excellence in developing countries, including the establishment and development of biodiversity legal databases, so that these centres can support ca-

pacity building in biodiversity legislation in their respective regions.

UNEP, in collaboration with WCMC, will continue to support the preparation of country studies, utilizing the new guidelines adopted in May 1993, as a contribution to the effective implementation of the CBD. These guidelines deal mainly with the national assessment of the status of biodiversity, including needs, management costs and benefits to be derived. These national assessments relate directly to Articles 6 and 7 of the CBD. Twelve country studies have been completed and 20 others are at various stages of preparation. Depending on the availability of funds, 25 country studies have been planned for the 1996-1997 biennium.

There are over 40 regional and international treaties worldwide dealing with *in situ* conservation of biodiversity. With the entry into force of the CBD and the United Nations Convention on the Law of the Sea (November 1994), there are now seven major global conventions dealing largely with biodiversity. In addition to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and the Convention on the Conservation of Migratory Species of Wild Animals (CMS), there is the Ramsar Convention on Wetlands of International Importance, the Convention Concerning the Protection of the World Cultural and Natural Heritage and the International Convention for the Regulation of Whaling, serviced by the International Whaling Commission (IWC).

UNEP services the secretariats and administers the trust funds of a number of international conventions related to biodiversity, including CITES and CMS, in addition to the secretariats and trust funds of regional instruments. In the early years of implementation of CITES and CMS, it provided funding to support the implementation of their respective programmes, which continued until the trust funds for the two conventions were established by the UNEP Governing Council. Today, when requested, UNEP has been providing funding for developing country participants and offering technical inputs into documents and reports prepared by the secretariats.

UNEP is exploring the feasibility of establishing a synergy mechanism on biodiversity-related conventions. This mechanism could serve to promote coordination and cooperation in the implementation of the respective work programmes of the agreements, where complementarity exists. It would also be well placed to address emerging issues in biodiversity and their relevance to other conventions. Its initial focus would be on the major global conventions, but could eventually be expanded to include key regional conventions and protocols. Through this mechanism, UNEP will assist governments in drafting supportive, complementary national legislation.

UNEP will work with other UN agencies and international organizations in providing technical support and back-stopping to the Intergovernmental Panel on Forests which operates under the Department of Policy Coordination for Sustainable Development (DPCSD) of the United Nations. UNEP's role in the Panel will include promoting scientific consensus-building and providing technical inputs. So far five issues for priority action are identified for the Panel. UNEP is well positioned to take the lead role in any three of the five issues: examination of sectoral and cross-sectoral linkages; technology transfers; trade and environment; legal mechanisms.

Biodiversity assessment, research and monitoring

Monitoring and assessment at the global, regional and national levels are fundamental for evaluating the changing status of biodiversity and the effectiveness of conservation and management activities. For data and information to be comparable and usable, harmonization of information standards and monitoring methodologies are essential. UNEP will enhance its assessment and monitoring activities and support management-oriented and problem-focused research.

UNEP will continue to support the World Conservation Monitoring Centre (WCMC) in its various activities including the preparation of the Global Biodiversity Status Reports Monitoring Centres, strengthening of the WCMC Information Service and the creation

of the National Biodiversity Monitoring Centres responsible for collecting, storing and analyzing national data and information on biodiversity, including relevant political, legal and economic developments.

Support for the Global Biodiversity Assessment (GBA) is a priority activity for UNEP. The main text of the GBA and a Policy-Makers Summary were completed in 1995. The GBA will be addressed to a wide audience which includes international, regional, and national environmental organizations, both governmental and NGOs, as well as policy-makers and scientists working in the field of biodiversity. In particular, the GBA will serve as a basis for decision-making to meet the objectives of the CBD as well as Agenda 21.

The Centres will be integrated into a global Biodiversity Information Network (BIN21) for assessing on an on-going basis the changing status of the earth's biodiversity. This network will form part of Earthwatch's Environmental and Natural Resource Information Networks Programme (ENRIN). For greater efficiency and effectiveness, the network will be structured along regional lines and coordinated through UNEP's regional Environmental Assessment Sub-programmes.

BIN21, through its centres, will also function as an early warning system for threats to biodiversity. The setting up of the early warning component of the network will be carried out in consultation with IUCN and other international and national partners. Its purpose is to monitor potential threats to biodiversity and mobilize action against them, and will be linked to the CBD.

UNEP will also also continue to implement the Biodiversity Data Management (BDM) project has as a principal result an initial tranche of 10 developing countries with increased capacity in data management in support of the implementation of Article 7 of the CBD.

Support for the Global Biodiversity Assessment (GBA) is a priority activity for UNEP.

UNEP supports management-oriented and problem-focused research to assist decision-making and environmental management. UNEP does not pretend to promote research across the biodiversity board. Where the opportunities appear for the organization to promote critical research required for management and decision-making, with the right centres of excellence and favourable funding perspectives, it will do so both directly and indirectly. Emphasis will be placed on those projects that have strong components for training researchers, specialists and managers from developing countries. Greater consideration will be given to involving centres of excellence in developing countries in the implementation of these actions.

The Smithsonian Tropical Research Institute (STRI) in collaboration with UNEP will organize a Conference on the Biodiversity and Ecology of the Tropical Forest Canopy for November 1996. Another key activity is to prepare a Master Plan for the Mpala Research Centre detailing (a) the short to long-term activities of the research, environmental management, training and information programmes, as well as the operational and management programmes for the 5,021 acre Mpala Foundation Property; (b) criteria and norms for research; (c) funding requirements for programmes, infrastructure and staff; and (d) linkages with other research, resource management and education organizations in Africa in order to maximize the practical value of studies at Mpala and elsewhere.

Managing biodiversity

Through its various programmes, UNEP supports a wide range of activities promoting *in situ* and *ex situ* conservation of plant, animal and microbial genetic resources and the use of these resources for agriculture, forestry and industry. In collaboration with partner agencies, it supports conservation of biodiversity within the frameworks of Agenda 21 and the CBD. In the BPIS, special attention will be given to the conservation and sustainable development of special ecosystems that are especially vulnerable. These include Small Island Developing

States (SIDS) and lands susceptible to desertification.

The BPIS also focuses much of its actions in promoting conservation and sustainable use of biodiversity in transborder settings. It is here where UNEP's expertise in mediation and consensus building is often most valued. Projects in this area are largely to support the preparation and implementation of strategies and action plans for regional seas, international watersheds and binational as well as multi-national reserves.

The collaborative efforts of FAO and UNEP in the field of animal genetic resources will continue to be supported.

UNEP will focus its activities on marine biodiversity, freshwater biodiversity, terrestrial biodiversity and microbiological and genetic resources. In the field of marine biodiversity, UNEP's support to the Global Plan of Action for the Conservation, Management and Utilization of Marine Mammals (MMAP) will continue to be a priority in its Marine Living Resources sub-programme. UNEP will also initiate support to the International Coral Reef Initiative (ICRI), one of the principal outcomes of the United Nations Conference on Small Island Developing States held in Barbados in April-May 1994.

UNEP will elaborate a Biodiversity Strategy for Small Island Developing States which will take into account the unique problems which they face in biodiversity management, including the potential threats posed by sea level rise. Such a project would also be in line with the CBD which takes note of the special conditions of small island states.

There is an urgent need to carry out a global assessment of the status of freshwater species as a basis for defining necessary actions for their protection. UNEP will explore with other partners the feasibility of carrying out such an assessment.

UNEP will also explore with its partners, including IUCN's Species Survival Commission (SSC), the feasibility of implementing a Global Plan of Action for the Conservation, Management and Sustainability of Freshwater and Amphibious Mammals, including river dolphins, manatees, otters and beavers. UNEP will also give greater attention to the management of wetlands as important natural resources for regulating the water regimes of rivers and lakes and as important habitats for a wide array of flora and fauna.

UNEP's activities in the area of terrestrial biodiversity are largely directed at strengthening national capacities in the management of terrestrial wildlife and protected areas. To this end, it has worked closely with IUCN's Commission on National Parks and Protected Areas (CNPPA). Several activities have been carried out in Africa, Eastern Europe and Asia in support of the Action Plan for Biosphere Reserves in association with UNESCO and UNEPCOM.

Equally important to UNEP has been the *ex situ* protection of genetic resources as a basic element to ensure the availability of genetic resources for sustainable development in agriculture and forestry. Article 9 of the CBD stresses the value of *ex situ* conservation facilities as the key to ensuring the availability of genetic resources for research and use.

The collaborative work in this field among UNEP, the International Plant Genetic Resources Institute (IPGRI), UNESCO and FAO, among others, will be essential in supporting the implementation of the provisions of Article 9, and for providing an invaluable resource base for the development of more productive sustainable systems in agriculture and forestry.

UNEP will continue to support the MIRCENs network and will cooperate with other agencies such as UNESCO and WCC as well as the international programme for the conservation of crop and tree genetic resources coordinated by IPGRI, particularly training and human resources development activities.

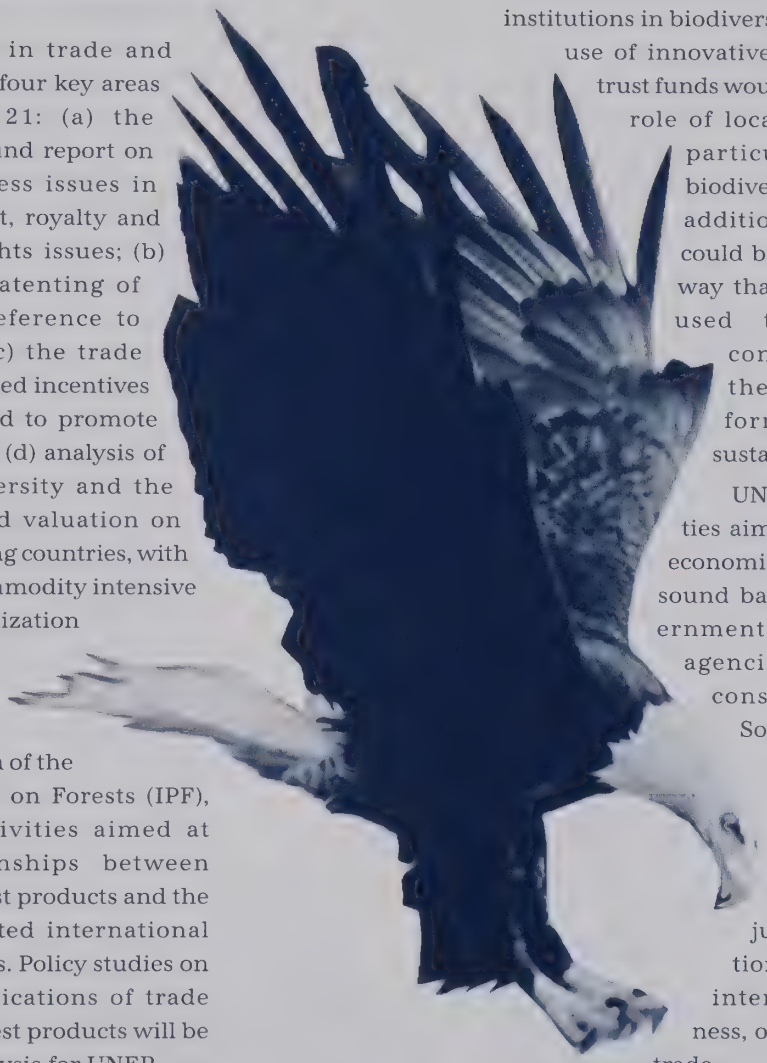
The collaborative efforts of FAO and UNEP in the field of animal genetic resources will continue to be supported. The focus will be on the conservation of domestic animal genetic resources through national and international actions.

Biodiversity and economics

According to Chapter 38 of Agenda 21, UNEP will concentrate on the developing and promoting the use of environmental economics and natural resource accounting as a priority area of action. In the field of biodiversity and economics, UNEP will focus

on four main areas: (1) international trade and biodiversity; (2) use of economic policy instruments for biodiversity management; (3) assessing the impact of development on biodiversity; and (4) sustainable use of biodiversity.

UNEP's future work in trade and biodiversity will focus on four key areas identified in Agenda 21: (a) the preparation of a background report on the implications of access issues in relation to existing patent, royalty and intellectual property rights issues; (b) economic analysis of patenting of GMOs, with specific reference to developing countries; (c) the trade implications of market-based incentives and instruments intended to promote biodiversity conservation; (d) analysis of the valuation of biodiversity and the implications of amended valuation on terms of trade for developing countries, with particular reference to commodity intensive exports; and (e) the organization of a major conference on "Environmental Review of Trade Policies".



In light of the formation of the Intergovernmental Panel on Forests (IPF), UNEP will support activities aimed at clarifying the relationships between international trade in forest products and the provisions of forest-related international environmental agreements. Policy studies on the environmental implications of trade agreements relating to forest products will be an important areas of analysis for UNEP.

The valuation of biodiversity continues to be a problematic area requiring further work. Greater attention will be given by UNEP to the development and application of economic tools for determining the costs and benefits of biodiversity conservation and sustainable utilization. To this end, UNEP proposes to carry out country pilot studies to enable countries to: (a) apply more effective economic approaches to biodiversity valuation (goods and services), including the development of natural resource accounts for biodiversity; (b) calculate the cost effectiveness of biodiversity conservation policy and project options; and (c) apply economic policy instruments such as economic incentives, tradable quotas and taxes, which are normally applied in combination with regulations.

UNEP will also design activities aimed at promoting the use "trust funds" as well as forging partnerships with private sector institutions in biodiversity conservation. The use of innovative approaches such as trust funds would help to enhance the role of local communities and particularly women in biodiversity conservation. In addition, such trust funds could be designed in such as way that external support is used to leverage local contributions and thereby stimulate the formation of self-sustaining activities.

UNEP will support activities aimed at formulating an economically and ecologically-sound basis for advising Governments and development agencies on biodiversity conservation projects. Some of the issues to be covered include population, domestic policy distortions, appropriation failures, structural adjustment and international economic policy, international indebtedness, over-consumption and trade.

An area of particular interest in the impact of economic policy reforms and liberalizatiion on biodiversity conservation. Some of the economic policy reforms are associated with changes in land tenure regimes which affect biodiversity conservation in certain ways. These and other issues related to the impact of poverty on biodiversity conservation will also be addressed.

UNEP will support the preparation of a methodology and guidelines for assessing the impact of development on biodiversity. The methodology and guidelines will be applied and revised as required through country level pilot projects implemented in different ecosystem settings.

UNEP will promote and support the implementation of pilot projects for integrated ecosystem management, based on sustainable utilization of native biodiversity, in selected representative ecosystems (e.g., drylands, small islands, tropical forests, mountains).

The Cajamarca Pilot Project will be transformed into the Model Programme on the Integrated Management of Andean Ecosystems. The experiences and lessons learned from the pilot project phase on sustainable use of native species will be extended to other Peruvian areas and Andean countries.

Biotechnology development

Biotechnology is one of the fastest growing industries today. It is a complex subject that is central to the CBD and features prominently in Agenda 21 (Chapter 16). UNEP will promote actions to facilitate a better understanding of biodiversity issues, including assessments and information exchange. This is a one area where major efforts in capacity building are required. In the field of biotechnology, UNEP will focus on five areas: (1) building biotechnology capacity in the developing countries; (2) conserving microbial resources and developing related technologies; (3) disseminating information and offering training in biotechnology safety; (4) developing international technical guidelines on biosafety; and (5) promoting fair and equitable sharing of the benefits of biodiversity utilization.

UNEP will support training activities for building capabilities to acquire, assimilate and utilize technology for environmental management and sustainable development. It is the building of technological capabilities that will enable the countries to make the transition to sustainable development and effectively deal with the barriers. For new technologies to be absorbed effectively, human skills for handling them must be developed.

UNEP will also assist countries in the formulation of a policy and institutional measures for accumulating technological capabilities and applying them to sustainable development and will initiate a project for facilitating expertise to developing countries requesting advise on complex issues such as intellectual property, contracts with pharmaceutical companies, biodiversity prospecting, and technology transfer, among others. Specialists from developing countries will be trained to participate in providing these facilitating services in their respective regions.

Biotechnology is one of the fastest growing industries today.

An immediate action that UNEP will take, which will contribute to the implementation of Articles 16 and 17 of the CBD, will be the preparation of an inventory of transferable biotechnologies and know-how that are relevant to the conservation and sustainability of biodiversity or that make use of genetic resources that do not damage the environment.

UNEP will also support the preparation of inventories of indigenous knowledge. Such inventories have become necessary because of the growing recognition that indigenous communities are custodians of important information on biodiversity conservation. The inventories will be prepared in a way that does not undermine the rights of indigenous peoples and local communities.

Greater attention also has to be given to profiling country needs and capability in the field of biotechnology. Such profiles will help countries determine investment costs for technology transfer and biotechnology development as a component of national development strategies. They will take into account issues such as socio-economic impacts and indigenous contributions. These activities will be carried out within the context of the biodiversity country studies, strategies and action plans described above.

UNEP will also continue its support to the Information Resource on the Release of Organisms into the Environment (IRRO). This is a global referral service on information regarding genetically modified organisms and where it can be accessed. UNEP is backing the expansion of IRRO and the training activities which it carries out.

UNEP will continue to support the MIRCENs by expanding the network and reorienting existing MIRCENs to execute pilot projects for the conservation and sustainable use of microbiological resources. UNEP will also continue to support training activities in microbiology and related technologies.

The agency participates in the UNIDO/UNEP/WHO/FAO Working Group on Biotechnology Safety which is addressing issues such as the promotion of an international code of conduct, the provision of advisory services to Governments in the assessment of releases of genetically engineered and exotic organisms into the environment, the elaboration of a biosafety manual, biosafety training, and the establishment of an international database on the release of genetically engineered organisms.

UNEP will continue to support the activities of the UNIDO/UNEP/WHO/FAO Working Group on Biotechnology Safety. In collaboration with the Working Group on Biotechnology Safety and other international and regional partners, UNEP will support the establishment of an International Register of Genetically Engineered Organisms which would contain information on the numbers and kinds of organisms modified, the methods used, the purpose of the modification, the organization responsible and biosafety considerations.

The issue of biosafety has emerged as one of the most critical themes in the implementation of the CBD as well as Chapter 16 Agenda 21. While Governments agree that biotechnology development is an essential aspect of growth and international trade, they are equally concerned about the risks associated with the possible release of GMOs into the environment. In this regard, efforts are underway to consider the need for a protocol on biosafety under the auspices of the CBD.

As a contribution to the implementation of Agenda 21 (Chapter 16) and in support of the CBD, UNEP will sponsor a meeting of government-designated experts to review international technical guidelines on biosafety, preceded by regional consultations. UNEP has already been carrying out regional consultations to review the proposed guidelines. The outcomes of these consultations and a meeting of government-designated experts organized to review the draft international technical guidelines on biosafety will be made available to the COP of the CBD at its next meeting. If requested by the COP, UNEP will consider follow-up support, particularly for national capacity building related to the implementation of the guidelines.

The area of the fair and equitable sharing of the benefits of biodiversity utilization is a critical aspect of the CBD. Little is known about how such sharing could be done and it is important for UNEP to assist Governments in formulating relevant and appropriate policies that promote this objective of the CBD. In order to promote this objective, UNEP and the COP of the CBD will need to develop effective ways of fostering cooperation between the private sector and public institutions in the developing countries.

UNEP will support policy studies on the fair and equitable sharing of biological resources and the benefits which they generate, taking into account issues such as access to genetic resources, access to technology and technology transfer, the collective knowledge and innovations of indigenous people and the rights of farmers.

UNEP, in cooperation with other relevant agencies, will document and disseminate information on cases studies and experiences of successful efforts to promote the fair and equitable sharing of the benefits of biodiversity utilization. Such experiences could form the basis for the formulation of guidelines of promoting the CBD objective.

UNEP, in cooperation with the CBD Secretariat and other UN agencies will seek ways of promoting the participation of the private sector in the implementation of the CBD. Initially, this will involve consultation with the private sector to identify modalities for effective co-operation. A possible action is a series of regional consultations at which the private sector will express their views on the CBD.

Capacity building and human resource development

Capacity building and human resource development is a cross-cutting strategic action found in the majority of UNEP's biodiversity projects. The actions described below relate to projects that are dedicated exclusively to capacity building and human resource development. The theme of capacity development is considered essential for all the work of UNEP. The organization will work with institutions such UNDP in ensuring that

capacity building is effectively integrated into all biodiversity projects.

UNEP has supported the development of education on biodiversity, in all its aspects, at the primary, secondary and university levels. Under the UNEP/UNESCO International Environmental Education Programme, formal school and university education, including biodiversity, has been promoted for several years. Although formal education is not one of the strategic actions commonly found throughout the range of UNEP's biodiversity projects, it features in some of UNEP's projects.

The *Global Biodiversity Strategy* and other strategy papers have noted the importance of training more taxonomists and stimulating taxonomic research as essential tools for the design and implementation of biodiversity management programmes. Very little training has been provided in this area. UNEP has begun to address this problem and will be supporting a three month training programme for candidates from developing and developed countries through the School of Plant Sciences of the University of Reading in the UK.

In addition to technical training, there is an urgent need to capacity building in the field of environmental policy analysis to complement UNEP's efforts in environmental law. This is particular important because most developing countries lack the capacity to carry out policy analysis on how to integrate environmental considerations into domestic policies. The increase in the number of international agreements requiring national action has increased the demand for policy analysis. UNEP staff already cooperate institutions such as ACTS which have refocussed their programmes to focus on building capacity in environmental policy analysis.

UNEP will continue to support the training of taxonomists. In consultation with scientific instututions, UNEP will design a project for training specialists in systematic biology for identifying priority protectable areas that enclose viable populations of high numbers of species. This training will include instruction on the application of technologies from molecular genetics such as DNA sequencing technology which can be utilized as diagnostic and prescriptive tools for the natural resource decision-maker and manager.

These technologies generate molecular data that provide a level of discrimination not generally available from more traditional systematic methods, such as taxonomy, and can be employed for planning biodiversity conservation programmes in three ways: (a) the identification of genetically unique populations; (b) the identification of populations with reduced genetic diversity whose capacity to respond to environmental change may be thereby impaired, and; (c) the determination of genetic characteristics of populations that are vulnerable to extinction.

Recent research has documented genetic divergence between geographical populations of tropical birds that significantly exceeds that observed between many species of temperate birds. These genetic data suggest that the current taxonomy of tropical species severely underestimates the diversity that exists beneath the species designation. The overall benefit of a systematics approach, based on new molecular technologies and a historical biogeographical appraisal, is that it is much more accurate in developing priority lists of habitats and ecosystems required for the preservation of biodiversity.

UNEP will study the feasibility of establishing a specialized capacity building and graduate level education project in biodiversity for developing countries. Human resource development is a top priority for improving conservation and sustainable use of biodiversity in the developing world. The project will be broad enough to permit the training of public and private sector professionals, as well as to support graduate students in biodiversity, including biotechnology, and related sciences.

The theme of capacity development is considered essential for all the work of UNEP.

UNEP will work with other institutions in supporting efforts to build capacity in environmental policy analysis in the developing countries. For more effective implementation of this action, UNEP will support initiatives aimed at developing the capacity to train policy analysts in the developing countries.

Raising awareness and dissemination information

Raising public awareness and disseminating information are key tools in catalyzing action

for biodiversity conservation. UNEP will continue to enhance its activities in this field by integrating biodiversity considerations in its public awareness and information dissemination activities. In addition, UNEP will also look into the possibilities of using new information technologies to promote awareness through electronic networks.

In order to raise public awareness and disseminate information, UNEP will under take a number of activities, particularly to: (a) train journalists on how to cover biodiversity-related events; (b) providing biodiversity information to the youth will be undertaken by UNEP through a series of workshops for youth leaders at the UNEP Global and Regional Youth Forums and the International Children's conferences; (c) produce new video and films on biodiversity issues in cooperation with other orgnizations; (d) carry special supplements, sections and articles on biodiversity in *Our Planet*; (e) focus one of the future World Environment Days on biodiversity issues, and; (f) organize and International Photo Competition and mount a traveling photo exhibition on biodiversity.

Implementation

Structurally, the projects comprising the BPIS will flow through a four step project cycle: first, building consensus at the scientific and technical level; second, building consensus at the global, regional, sub-regional and national levels; third, implementing actions; and fourth, evaluating performance. Wherever, possible the following cross-cutting strategic actions will be built into projects depending on the relevant stages of the project cycle: (a) undertaking research, assessment and monitoring; (b) building scientific and political consensus; (c) developing policies, institutions and environmental legislation; (d) integrating environmental economics into conservation efforts; (e) building capacity building and strengthening institutions; (f) supporting the participation of local communities, major groups and non-governmental organizations (NGOs) with particular emphasis on the role of women, and (g) and raising public awareness and disseminating information.

Setting priorities

In consultation with the Executive Director's Advisory Panel of Biodiversity Experts the proposed actions of the BPIS were divided into high and medium priority actions. It should be noted, however, that all were considered important. The following criteria were used in rating the proposed actions: (a) the overall technical importance for conservation and sustainable use of biodiversity; (b) the political importance assigned to the issue by Governments; (c) the degree of innovativeness and newness; (d) the importance of the role to be played by UNEP and (e) the importance of action catalyzed by UNEP.

The application of the third criteria tended to relegate many on-going activities to a second order of importance. The fourth criteria weighed heavily, since it was felt that greater emphasis should be given to actions where the role of UNEP was essential, especially in those cases in which minor activity was being generated from other United Nations organizations. The high and medium priority proposed actions are presented in the following two tables. Actions related to GEF operational strategies are not included.

Cross-cutting strategic actions

To fulfill its role as a catalytic agency promoting the formulation and implementation of biodiversity management as an integral element of sustainable development, there are seven strategic cross-cutting actions that should be built into UNEP's biodiversity projects, whenever possible, at the regional, sub-regional and national levels. These cross-cutting strategic actions represent themes that are essential for the successful implementation of the specific actions outlined in the strategy. The strategic actions also represent UNEP's areas of strengthen as well as its overall emphasis in the implementation of its activities.

For projects to be effectively focused, particularly those supporting the preparation and implementation of action plans for the management and sustainable use of biodiversity, they must be based on sound *research, assessment and monitoring* in support of project objectives and outputs. UNEP will emphasize the promotion of the use research results as well as assessments and monitoring

BOX 2. Priority actions

High priority actions

1. Support to international agreements on biodiversity
2. International trade and biodiversity
3. Sharing of benefits derived from biodiversity
4. Training in biosafety
5. Global biodiversity assessment and monitoring
6. Economic policy instruments for biodiversity management
7. Pilot projects on sustainable use of biodiversity
8. Country studies, strategies and action plans, inventories, assessments, monitoring and data management
9. Global Biodiversity Assessment project
10. Management-oriented, problem-focused research
11. Capacity building and human resource development
12. Raising public awareness
13. Marine Mammal Action Plan
14. International Coral Reef Initiative
15. Regional Seas Protocols concerning Specially Protected Areas and Wildlife (SPAWs)
16. Biodiversity Strategy for Small Island Developing States
17. Global assessment of freshwater living resources
18. Integration of Biodiversity components into action plans for international watersheds
19. Pilot projects on the sustainable use of biodiversity in the management of mountain and fragile dryland ecosystems
20. Animal genetic resources

Medium priority actions

1. Synergy mechanism on biodiversity-related conventions
2. International technical guidelines on biosafety
3. Impact assessments of development on biodiversity
4. Inventory, development and transference of biotechnology capabilities
5. Wetlands management
6. Action Plan for Freshwater Mammals
7. Wildlife and protected areas
8. Elephant and Rhinoceros Facility
9. MIRCENs
10. Plant genetic resources
11. On-going actions in animal genetic resources

in biodiversity activities. These actions are critical for biodiversity because of limited information available in this field that can be effectively used in project planning.

One of the most important functions of UNEP has been to bring scientific analysis into the political process. This process has often involved first *securing consensus* among scientists on particular issues, many of which are controversial. One the basis of the consensus secured, UNEP has effectively sought to build political consensus and to secure the agreements needed for global, regional and national action.

In this regard, consensus-building has been an important aspect of the application of the precautionary principles to environmental action. UNEP will continue to pursue these approaches and will promote other activities such as conflict settlement which have become an essential aspect of environmental management at the global, regional and national levels.

The efficient and effective implementation of biodiversity management and sustainable use actions at the country level require the development of appropriate *national policy frameworks, institutional mandates and supportive national legislation.* These will be fundamental elements for the preparation and implementation of national, binational and multi-national biodiversity strategies and action plans, including special management projects. The provision of technical cooperation in the elaboration of national legislation, when requested by Governments, is especially important, since, without consideration of compliance, legal guarantees and enforcement, environmental mandates will go unheeded.

As long as *economic policy instruments* for biodiversity management and sustainable use are inadequately developed and applied, the management and sustainable use of biodiversity will be seriously hampered. In the wider picture, biodiversity is economically very important. All UNEP projects promoting the integrated management and sustainable development of biodiversity in the field must incorporate the elaboration and application of methodologies and tools for understanding the economics of biodiversity and for improving its management.

UNEP biodiversity projects should not stop at capacity building and institutional strengthening. Concrete actions for the integrated management and sustainable use of biodiversity must involve *local communities, major groups and NGOs.* Local participation is essential if attitudes and perceptions are to be

favourably altered on the ground. The Cajamarca pilot project which generated clearly discernible benefits, is an outstanding example of catalyzing local development and changing attitudes through local community involvement and participation. Particular attention will be paid to the role of women while designing and implementing biodiversity projects.

A principle objective of the greater majority of UNEP's biodiversity projects is to *strengthen the capacity and institutional infrastructure* of countries for managing and using more efficiently and effectively their biodiversity. Under the framework of the BPIS, this strategic action will focus on: (a) strengthening institutional capabilities in policy-making, information management, assessment and planning; (b) training and education of scientific, technical and managerial personnel; and (c) facilitating access to and transference of technologies.

Greater understanding of the importance of biodiversity to the health of this planet and as a vital resource for the future of humanity will enhance the implementation of effective biodiversity management programmes and action plans, particularly at the local and national levels. In its projects, UNEP must continue to actively *promote public awareness* of issues at the global and national levels through media campaigns, production and distribution of printed and audio-visual information, outreach activities and the organization of international environmental campaigns.

One of the most important functions of UNEP has been to bring scientific analysis into the political process.

Consultations

Inaugurated in November 1994, this high-level Advisory Panel of Biodiversity Experts is advising the Executive Director of UNEP on the work to be undertaken in the field of biodiversity and will identify those areas which require specific attention. In doing so, it will review progress in the implementation of the BPIS. The Advisory Panel is also expected to play a major role in advising the Executive Director on new and emerging

issues in the field of biodiversity, and will be consulted periodically on special issues and problems that will be addressed by the organization. The Advisory Panel is convened as required.

Consultation mechanisms such as the Global Biodiversity Forum, under the aegis of the joint IUCN/WRI/UNEP Biodiversity Programme, will be maintained to ensure that the views of these important players are taken into account in the formulation and evaluation of activities covering different aspects of biodiversity management. Conceived during the preparation of the *Global Biodiversity Strategy*, The Global Biodiversity Forum offers an independent, open process to promote analysis and free dialogue that addresses the key ecological, economic, institutional and social issues related to biodiversity, which complements the inter-governmental process with independent views and recomm endations.

Interagency cooperation

In continuation of its catalytic role, UNEP will support the development of joint collaborative programmes and projects to promote the conservation, integrated management and sustainable utilization of biodiversity with organizations within and outside the UN system. The multidisciplinary, multi-sectoral nature of biodiversity requires cooperation across a broad spectrum of global, regional, sub-regional and national organizations.

The Commission on Sustainable Development (CSD) is charged with ensuring an effective follow-up of the decisions of the United Nations Conference on Environment and Development and with monitoring progress in the implementation of Agenda 21 at the national, regional and international levels.

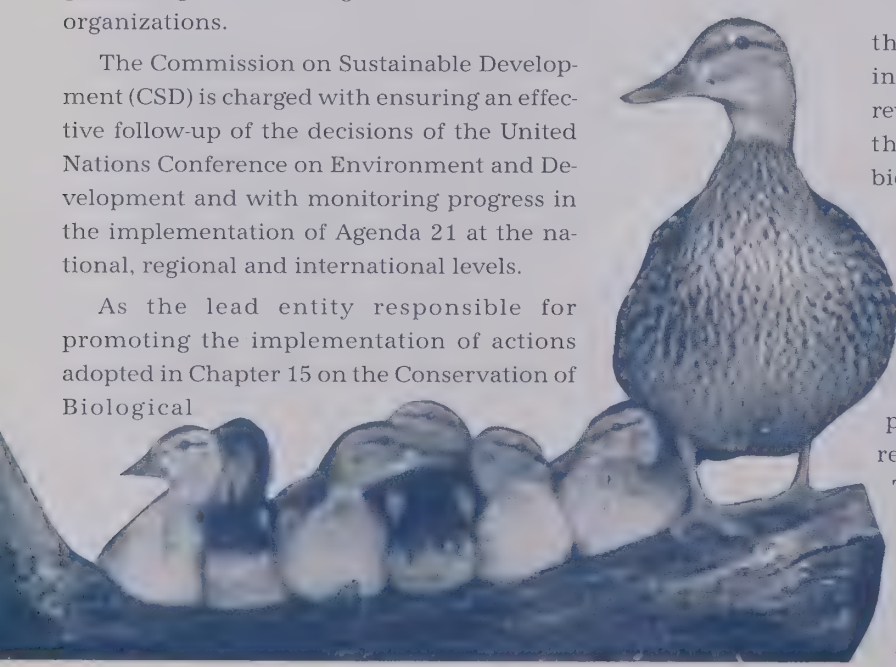
As the lead entity responsible for promoting the implementation of actions adopted in Chapter 15 on the Conservation of Biological Diversity of Agenda 21, UNEP will play an important role in reporting to the Commission on developments in the field of biodiversity throughout the UN System.

In carrying out its reporting function, UNEP will also direct its attention at assisting the CSD addressed economic policies for biodiversity in three areas: (a) financial resources and mechanisms; (b) trade and sustainable development and; (c) consumption patterns. The latter is an especially difficult issue which requires greater attention. As one of the implementing agencies of GEF, it is in a favourable position to contribute to this process.

The implementation of the BPIS will require the strengthening of a collaborative network comprised of UN agencies, scientific institutions, other centres of excellence, regional bodies, and non-governmental organizations (NGOs), among others. Guidance will continue to be provided by Government-designated experts who will also participate in the review of outputs. Implementation will be effected through the following mechanisms: (a) establishment of working groups; (b) the undertaking of peer reviews: (c) initiation and support of studies; (d) promotion of case studies and pilot projects in selected countries; (e) dissemination of knowledge and information, regional training, and (f) assistance to countries in the formulation of GEF projects.

Effective partnerships require joint thematic programming with partners institutions. The work of the ECG will be revitalized and expanded into a forum for joint thematic programming in the field of biodiversity.

As the Secretariat for the ECG, UNEP will take the lead in promoting closer cooperation on biodiversity issues among the member agencies. Joint thematic programming will be carried out at the regional level in order to enhance programme and project delivery at the regional, sub-regional and national levels. This activity will be carried out by UNEP's Regional Offices in collaboration with the Regional Commissions of the United Nations and the participation of leading IGOs, centres of excellence and NGOs in the respective regions. This exercise will be



closely coordinated with IUCN which has a number of regional offices.

Regional delivery

UNEP will play an increased role in catalyzing and promoting regional cooperation on transboundary ecosystems, cross-border influences and impacts on biodiversity, and other related regional concerns. Activities such as the provision of technical cooperation advisory services, the monitoring of changes in biodiversity, and information exchange can also be managed more efficiently at the regional level.

In line with the agency's policy of giving greater emphasis to overall programme delivery at the regional level, UNEP's regional offices will be expected to play an increasing role in the coordination and monitoring of biodiversity projects implemented in the respective regions. They are better placed for assessing the needs of their regions and for organizing joint thematic exercises with major regional and sub-regional partners as well as national focal points.

Integrated information management

An important element of the BPIS will be the establishment of an Integrated Information System on UNEP biodiversity projects and activities which will have the following functions: support reporting on the BPIS, serve as a central point for dissemination of information generated by projects, and ensure the exchange of technical information between related projects, particularly those developed in different sub-programmes. The following example best illustrates the benefits that can result from improved integrated management of information.

UNEP holds considerable information resources which can be used to support the BPIS. Of particular importance is the UNEP Library which hold one of the best collections in the world on environmental issues. This resource could be used to attract visiting scholars and researchers to spend time at UNEP and interact with the staff of the institution. The Integrated Information System will use the UNEP Library is one of its important components with the aim of developing it as an internationally-recognized source of information on biodiversity.

UNEP holds considerable information resources which can be used to support the BPIS.

In addition to the UNEP Library, UNEP's Information and Public Affairs (IPA) unit can be an important source of information on biodiversity. Already, IPA receives and responds to a wide range of queries related to biodiversity. However, IPA has not been able to keep track of all the biodiversity-related activities being undertaken by UNEP. One of the ways of achieving this is to ensure that the UNEP Editorial Committee performs the appropriate role of facilitating a query-response service.

Programme implementation and follow-up

The success of the BPIS requires improved monitoring and evaluation of projects, as well as a more effective and efficient coordination of the sub-programmes and respective management units which will participate in the implementation of this initiative. Enhanced programme execution and follow-up will be based on three key activities: (a) project and programme monitoring; (b) dissemination and exchange of information; and (c) sharing of experiences.

The first of these activities and parts of the other two are the responsibility of the Corporate Planning and Accountability Service (CPAS). Created in February 1994, the CPAS fulfills the central strategic planning and management advisory role of the agency. Its functions include, among others: (a) advising managers on assessment, project development and approval, budgeting and use of resources, and monitoring and evaluation; (b) identifying and encouraging better practices in programme delivery; (c) analyzing and recommending improvement in information and administrative support systems; and (d) streamlining UNEP's reporting, monitoring and evaluation processes, and integrating them within programme delivery.

Additional actions on the dissemination and exchange of information and the sharing of experiences for optimizing the use of project outputs are treated in the following point.

Deployment of resources

The Governing Council of UNEP approved the 1996-79 budget with substantial allocations for biodiversity conservation. The funds are designated under a programme element on "Caring for Biological Resources"

as well as embedded in other programme areas. The Governing Council approved US$7,202,000 for the programme element on "caring for Biological Resources". An additional US$1,929,000 is allocated to the Global Freshwater Assessment which will also cover biodiversity issues. Another US$1,54,000 is available for diagnostic studies of slected international basins in developing regions, including plans for their management. The studies will cover biodiversity issues. Another source of support for biodiversity management is the US$3,375,000 allocated for watershed an coastal zone integration activities. Support for biodiversity activities will also come from programmes dealing with land resources, environmental law, coordination of environmental convention secretariat, and trade and environment.

The Clearing-house offers additional funding over what is provided by the Environment Fund, especially for projects which are field oriented and implemented at the national level. Its potential is yet to be fully realized. With a coherent programme in biodiversity, UNEP through its Clearing-house mechanism is in a more favourable position for attracting the support of bilateral donors, particularly for projects which include capacity building components.

Projects funded through bilateral technical cooperation trust funds can benefit from a multiplying effect in resources, since successful projects can attract additional funding from the initial donor as well as new bilateral donors. Where centres of excellence are the implementing organizations, prospects for attracting private sector funding are greatly enhanced.

The role of the Clearing-house as a key facilitator in the funding of country-level biodiversity projects will be strengthened. The BPIS will be the framework which the Clearing-house will utilize in approaching donors for funding priority activities within the BPIS.

For 1995 alone, nearly US$220 million was made available through GEF for funding (a) enabling activities under climate change and biodiversity and (b) selected priority projects to benefit the focal areas of climate change, biodiversity and international waters. As the interim financial mechanism of the CBD, GEF will play a key role in financing the implementation of projects carried out under the Convention. The Conference of the Contracting Parties will determine the eligibility criteria for the funding of the Convention's programme priorities.

Where centres of excellence are the implementing organizations, prospects for attracting private sector funding are greatly enhanced.

In the overall framework of GEF, UNEP will play an important role providing guidance on technical aspects to be considered in the funding of biodiversity projects. Along with UNDP and the World Bank, UNEP is currently assisting the GEF Secretariat in the preparation of the GEF Operational Strategy on Biodiversity. UNEP will also be expected to continue to play an important role in providing scientific and technical inputs to GEF at all levels, including the review of funding proposals in the field of biodiversity. It also serves as the Secretariat of the Scientific and Technical Advisory Panel (STAP), the principal advisory body of GEF on scientific and technical aspects.

It is expected that in several areas the GEF Operational Strategy on Biodiversity and the BPIS will complement each other. Both stress the importance of strengthening the scientific and technical base for environmental management and sustainable development; national capacity building in assessment, monitoring, legislation and research; the transfer of environmentally sound technology; and the development and implementation of strategic national projects for the management and sustainable use of biodiversity.

Through the GEF Operational Strategy on Biodiversity, UNEP will play a major role in mobilizing funds for projects in support of the implementation of Agenda 21 and the CBD, particularly projects that provide technical assistance and investments for biodiversity conservation, management and sustainable utilization at the country level.

UNEP will also initiate and carry out projects which reinforce the ability of GEF to arrive at sound policy and operational decisions. Such projects will: (a) support the strategic objectives of the CBD; (b) enhance the ability of developing countries and countries with economies in transition to implement their Convention obligations through the

preparation of national biodiversity strategies and action plans; (c) provide a more solid scientific and technical base in support of cost-effective, sustainable and high priority GEF biodiversity projects; (d) enhance the participation of developing countries and countries with economies in transition in scientific and technical assessments and monitoring activities; and (e) promote regional cooperation in biodiversity management and conservation.

Expected results

Over the 1995-2000 period, the BPIS will seek to achieve a number of concrete results. First, UNEP will be more proactive in addressing emerging issues and major challenges in the field of biodiversity, in which UNEP effectively exercises its leadership as assigned in Agenda 21. With this programme, UNEP expects: (a) enhanced follow-up to Chapters 15, 16 and 38 of Agenda 21; (b) enhanced implementation of biodiversity-related international agreements; (c) heightened knowledge on biodiversity through research, assessment, data management and monitoring; (d) increased understanding of biodiversity and economics, including more widespread application of economic policy intruments for biodiversity management and sustainable use; (e) major increase in the development and implementation of country biodiversity strategies and action plans; (f) more effective implementation of the GEF Operational Strategy for Biodiversity and; (g) improved awareness and better coverage of biodiversity issues in the media.

Evaluation

A review and evaluation of the BPIS will be held every year. The objectives of the programme review will be to: (a) assess the status of implementation of the BPIS, particularly as regards the success or failure to achieve the expected outputs and results; (b) identify factors affecting the achievement of expected outputs and results; (c) establish future priority targets (outputs and results) within the framework of the BPIS; (d) analyze budgetary implications for the future implementation of the revised BPIS and (e) identify ways and means for implementing the BPIS more efficiently and effectively.

1. CHARTING A NEW PATH

Introduction

The United Nations Environment Programme (UNEP) was established as the main institutional mechanism for follow-up to the decisions of the United Nations Conference on the Human Environment in Stockholm from 5–16 June 1972. At the first UNEP Governing Council in June 1973, the Action Plan for the Human Environment was adopted, in which the conservation of nature, wildlife and genetic resources was considered a programme priority. The conservation and sustainable use of biodiversity—which is defined in the Convention on Biological Diversity (CBD) as "the variability among living organisms from all sources including, *inter alia*, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are a part; this includes diversity within species, between species and of ecosystems"—is at the core of the organisation's mission.[1] To further its mission, UNEP has developed a new Biodiversity Programme and Implementation Strategy (BPIS) as a flagship activity for the organization. The BPIS conceptually and operationally builds on the *Global Biodiversity Strategy* released jointly with World Resources Institute (WRI) and the World Conservation Union (IUCN) in 1992 which states that

> Successful action to conserve biodiversity must address the full range of causes of its current loss and embrace the opportunities that genes, species, and ecosystems provide for sustainable development. Because the goal of biodiversity conservation—supporting sustainable development by protecting and using biological resources in ways that do not diminish the world's variety of genes and species or destroy important habitats and ecosystems—is so broad, any biodiversity conservation strategy must also have a broad scope. But the campaign can be broken down into three basic elements: saving biodiversity, studying it, and using it sustainably and equitably.

1.1 UNEP's expertise in biodiversity

During the past two decades, UNEP has played a major role in raising global awareness on the need to protect and sustainably manage the earth's biodiversity. Through numerous initiatives, UNEP has been working to protect species—and their genetic resources—and to conserve the habitats in which they live. These include supporting the preparation of major international conservation strategies such as: the *World Conservation Strategy: Living Resource Conservation for Sustainable Development* launched jointly in 1980 with IUCN and World Wide Fund for Nature (WWF); *Caring for the Earth: A Strategy for Sustainable Living*, the 1992 edition of the *World Conservation Strategy*; *The Environmental Perspective to the Year 2000* released in 1988; the *Global Biodiversity Strategy* released jointly with WRI and IUCN in 1992; the *Global Marine Biological Strategy* prepared jointly with the Centre for Marine Conservation (CMC), IUCN, WWF and the World Bank; and the *Global Biodiversity: Status of the Earth's Living Resources* compiled and published by the World Conservation Monitoring Centre (WCMC) in collaboration with the Natural History Museum of London and in association with IUCN, WWF and WRI in 1992. In 1991, UNEP supported WCMC in the preparation of the three-volume *World Directory of National Parks and Protected Areas* and the three-volume *Coral Reefs of the World.* UNEP has also coordinated the preparation of the Global Biodiversity Assessment (GBA).

In other areas UNEP has accumulated considerable experience and expertise. One key field has been the rallying financial and intellectual resources to support the negotiation and implementation of international and regional environmental agreements. UNEP has used its specialized knowledge in building scientific consensus in helping governments to reach political agreements. The agency serves as the secretariat for several important international agreements such as the CBD, the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), the Convention on the Conservation of Migratory Species of Wild Animals (CMS), the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, the Montreal Protocol on Substances that Deplete the Ozone Layer, and was the principal supporter of preparatory work leading to the formulation, adoption and implementation of the CBD.

UNEP has been working to protect species—and their genetic resources—and to conserve the habitats in which they live.

Through its Oceans and Coastal Areas Programme Activity Centre (OCA/PAC), UNEP promoted the ratification of a number of regional conventions for the protection of regional seas and coastal areas. UNEP also serves as the secretariat for a number of Regional Seas Action Plans which have not yet established local secretariats in their respective regions. These include the Barcelona Convention for the Protection of the Mediterranean Sea against Pollution and the Cartagena Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region.

UNEP has also played an important role in assisting governments to prepare national environmental legislation, much of it dealing with biodiversity. Substantial assistance has been given to Governments in preparing national legal instruments needed to complement the implementation of international agreements. The Regional Programme on the Development of Environmental Policies and Legislation for Latin America and the Caribbean is being utilized as a model for extending assistance in the field of environmental legislation to other developing regions.

The successful regional seas action plans, which cover biodiversity conservation, are serving as models for intergovernmental regional action plans in other fields, particularly in the management of freshwater resources. The UNEP Water Programme is promoting the preparation and implementation of integrated management plans for international watersheds such as

1. The Convention on Biological Diversity refers to the sustainable use of biodiversity as "the use of components of biological diversity in a way and at a rate that does not lead to the long-term decline of biological diversity, thereby maintaining its potential to meet the needs and aspirations of present and future generations".

Lake Titicaca, the San Juan River and the Aral Sea, each covering biodiversity.

Environmental assessment has been one of UNEP's most important activities. Earthwatch, the Global Environmental Monitoring System (GEMS) and the Global Resource Information Database (GRID) have carried out important activities in assessment and data management. Since 1988, WCMC has worked closely with UNEP in biodiversity assessments, as well as capacity-building for biodiversity data management in the developing world.

UNEP has also played an important role raising public awareness through various media and publications on the loss of biodiversity. It is through this concerted public awareness campaign that UNEP was instrumental in putting the issue on the agenda for global action. UNEP publications such as the State of the Environment reports played a critical role in galvanizing world opinion on the importance of treating biodiversity loss as a global challenge.

The BPIS builds on an assessment of the successes and failures of past activities. Programmes and projects that have succeeded in achieving their goals and meeting the needs of Governments, agencies and other parties are logical building blocks for the BPIS.

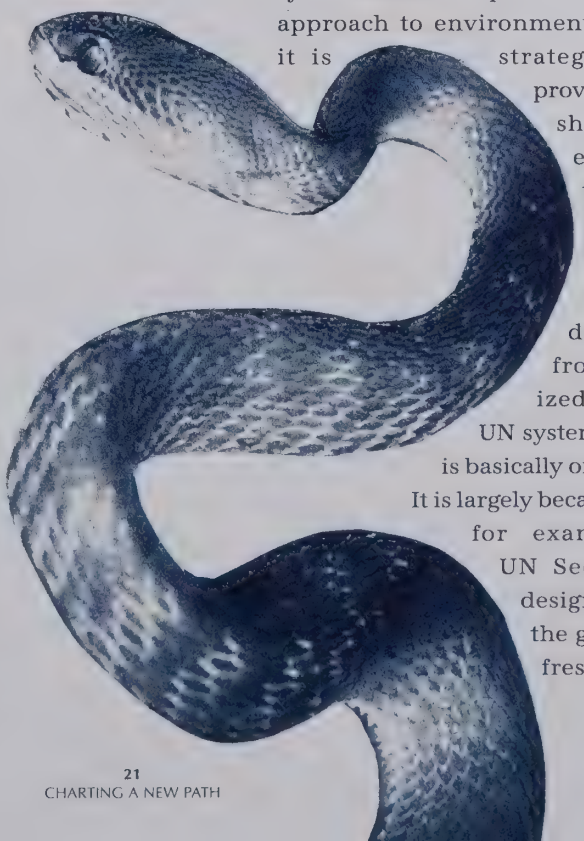
1.2 UNEP's new vision and the unfolding world

Twenty years after Stockholm, the United Nations Conference on Environment and Development (UNCED), through the adoption of Agenda 21, reaffirmed UNEP's role as the principal body in the UN system dealing with environmental management. Despite this significant continuity in the role of UNEP in the UN system, the world of today differs significantly from the pre-UNCED period. Environment in general was an emerging issue. Today it is high on the agenda for international action, and the world is deeply concerned about global threats to life support systems on earth.

While few UN agencies concerned themselves with environmental issues two decades ago, today most are addressing environmental management and sustainable development. For much of the last two decades environment tended to be treated as a sectoral issue in most countries; today it is recognized that effective environmental management and sustainable development are linked and must be based on a multi-disciplinary, cross-sectoral approach. Furthermore, environment provides the guiding principles for concepts such as sustainable development.

The perception of biodiversity itself has changed. In 1972 it was mostly associated with protection of wildlife and management of protected areas. Today it is accepted as being central to ecological processes and as the resource base for biotechnology, one of the world's fastest growing industries that influences most economic activities. Its importance in agriculture, ecosystem management and land use planning is becoming clearer. At the same time, the loss of biodiversity is recognized as a major threat to evolutionary processes, life support systems and human welfare.

In the broader context of sustainable development, UNEP has a great responsibility in providing leadership in environmental management in general and biodiversity conservation in particular. This requires UNEP to leverage knowledge and resources, build consensus and catalyze action to broaden and deepen conservation activities. Because UNEP is the only organization in the United Nations system with a comprehensive and integrated approach to environmental management, it is strategically placed to provide global leadership in promoting environmental action.



It is the cross-sectoral nature of UNEP's work that distinguishes it from other specialized agencies in the UN system whose mandate is basically of a sectoral nature. It is largely because of this reason, for example, that the UN Secretary General designated UNEP with the global mandate on freshwater resources

following the 1992 Dublin Conference on Water and Environment. Likewise, UNEP has become the moving force in the UN system for a coordinated and integrated approach to the conservation and sustainable use of biodiversity.

To effectively exercise this leadership role in the field of biodiversity, UNEP will make full use of its experience and expertise in promoting multidisciplinary management-oriented, problem-focused scientific and technical research; policy formulation; building capacity for an integrated approach to biodiversity management; building consensus and settling conflicts; providing advisory services; and catalyzing the implementation of actions in the field at the regional, sub-regional and national levels.

In two major areas, the new UNEP will put greater emphasis on multidisciplinary management-oriented, problem-focused scientific and technical research as a prerequisite for leveraging knowledge and building consensus on complex issues in the field of biodiversity. It will also strengthen regional, sub-regional and country delivery, particularly in supporting the preparation and implementation of national biodiversity strategies and action plans.

1.3 UNEP's renewed mandate in biodiversity

As the principal body in the UN system concerned with environmental management, UNEP has the main role in promoting the implementation of actions adopted in Chapter 15 and other relevant chapter of Agenda 21 as well as the CBD. It is UNEP's priority to promote international cooperation in the field of the environment, including, as appropriate, recommending policies for action.

Moreover, according to Chapter 38 of Agenda 21, UNEP is the lead UN

BOX 3. UNEP's mandate from Rio

38.21. In the follow-up to the Conference, there will be a need for an enhanced and strengthened role of UNEP and its Governing Council. The Governing Council should within its mandate continue to play its role with regard to policy guidance and coordination in the field of the environment, taking into account the development perspective.

38.22. Priority areas on which UNEP should concentrate include the following:

(a) strengthening its catalytic role in stimulating and promoting environmental activities and considerations throughout the United Nations system;

(b) promoting international cooperation in the field of environment and recommending, as appropriate, policies to this end;

(c) developing and promoting the use of techniques such as natural resource accounting and environmental economics;

(d) environmental monitoring and assessment, both through improved participation by the United Nations system agencies in the Earthwatch programme and expanded relations with private scientific and non-governmental research institutes; strengthening and making operational its early warning function;

(e) coordination and promotion of relevant scientific research with a view to providing a consolidated basis for decision-making;

(f) dissemination of environmental information and data to Governments and to organs, programmes and organizations of the United Nations system;

(g) raising general awareness and action in the area of environmental protection through collaboration with the general public, non-governmental entities and intergovernmental institutions;

(h) further development of international environmental law, in particular conventions and guidelines, promotion of its implementation, and coordinating functions arising from an increasing number of international legal agreements, inter alia, the functioning of the secretariats of the Conventions, taking into account the need for the most efficient use of resources, including possible co-location of secretariats established in the future;

(i) further development and promotion of the widest possible use of environmental impact assessments, including activities carried out under the auspices of United Nations specialized agencies, and in connection with every significant economic development project or activity;

(j) facilitation of information exchange on environmentally sound technologies, including legal aspects, and provision of training;

(k) promotion of sub-regional and regional cooperation and support to relevant initiatives and programmes for environmental protection including playing a major contributing and coordinating role in the regional mechanisms in the field of environment identified for the follow-up to UNCED;

(l) providing technical, legal and institutional advice to Governments, upon request in establishing and enhancing their national legal and institutional frameworks, in particular, in cooperation with UNDP capacity-building efforts;

agency for furthering the "development of international environmental law, in particular conventions and guidelines, promotion of its implementation, and coordinating functions arising from an increasing number of international legal agreements, *inter alia*, the functioning of the secretariats of the Conventions, taking into account the need for the most efficient use of resources, including possible co-location of secretariats established in the future". This mandate creates considerable scope for UNEP to play an important role in furthering the development of international environmental law by bring scientific expertise into the process of political consensus-building.

1.4 The Biodiversity Programme and Implementation Strategy

The BPIS is a multidisciplinary, multi-sectoral approach to the integrated management and sustainable utilization of biodiversity in oceans and coastal areas, freshwater ecosystems and terrestrial ecosystems. It provides the framework for UNEP support to the implementation of Agenda 21 in the fields of biodiversity and biotechnology, to support the implementation of the CBD and other relevant international conventions, as well as contributing to the design and implementation of operational strategies for the Global Environmental Facility (GEF). The BPIS builds previous global efforts to conserve the world's living resources.

The BPIS takes into account the strong linkages between Agenda 21 and the CBD. The provisions of the latter are reinforced by Chapter 15 of Agenda 21 which stresses the value of biological resources as a capital asset with great potential for yielding sustainable benefits at the country level. It emphasizes the need to build capacities for the assessment, evaluation and mon-itoring of biodiversity at the national level, while ensuring the full participation of, and support to, local communities. It also calls for support for the preparation of country studies, with particular reference to costs, benefits and socio-economic issues relevant to effective biodiversity conservation and sustainable use of biological resources.

Through the BPIS, UNEP will strengthen its role in generating and leveraging knowledge on biodiversity management by mobilizing scientific and technical expertise. To achieve this, stronger partnerships will be forged with centres of excellence in the developed and developing countries. Knowledge will be generated and collected through scientific and technical assessments, targeted research and the development of conceptual frameworks for policy formulation. The knowledge will be widely disseminated to support countries in implementing Agenda 21 and the CBD as well as for the design of strategies for implementing GEF-financed projects. Strengthening the scientific basis for action is crucial in ensuring that capacity building and investment projects in the field of biodiversity are implemented in an efficient and cost-effective manner.

Structurally, the projects comprising the BPIS will flow through a five step project life cycle: first, building consensus at the scientific and technical level; second, policy formulation; third, building consensus at the

global, regional, sub-regional and national levels; fourth, implementing actions; and fifth, evaluating performance.

Wherever, possible the following cross-cutting strategic actions will be built into projects depending on the relevant stages of the cycle: (a) undertaking research, assessment and monitoring; (b) policy formulation; (c) building scientific and political consensus; (d) developing legal and institutional mechanisms; (e) integrating environmental economics into conservation efforts; (f) building capacity building and strengthening institutions; (g) supporting the participation of local communities, major groups and non-governmental organizations (NGOs) with particular emphasis on the role of women, and (h) and raising public awareness and disseminating information.

1.5 Delivering through action plans

In UNEP's experience, the delivery to governments of policy options, integrated management strategies, planning methodologies, assessment techniques, technical know-how and capacity building in general, and their translation into concrete programmes and actions has been most effectively accomplished through the development and implementation of regional, sub-regional, binational, multi-national and national action plans. UNEP will use these action plans as the most effective vehicles for integrating biodiversity considerations into the economic development planning processes at the national level.

2. THE BIODIVERSITY PROGRAMME MISSION AND OBJECTIVES

2.1 Mission and objectives

The mission of the BPIS is to contribute to the conservation, sustainable use and the fair and equitable distribution of the benefits from the use of genetic resources. This mission will be pursued to promote sustainable development. The general objective of the programme is to catalyze global, regional, sub-regional and national actions in support of Agenda 21 and the CBD. The BPIS provides the framework for UNEP support to the implementation of Agenda 21 in the fields of biodiversity and biotechnology, the CBD and other relevant international conventions. It also contributes to the design and implementation of operational strategies for the GEF. The BPIS builds previous global efforts to conserve the world's living resources. The BPIS aims to:

- extend biodiversity research, assessment and monitoring at the global, regional, sub-regional and national levels in support of improved baselines for the identification, monitoring and development of action plans as required under Articles 6 and 7 of the CBD
- build scientific and political consensus on issues of biodiversity so as to achieve the needed concerted action for conservation and sustainable utilization of biodiversity
- assist Governments, both at the international and national levels, in the formulation and implementation of agreements, policies, strategies, actions and plans for the conservation and sustainable use of biodiversity
- promote the integration of biodiversity conservation elements in regional, sub-regional and national action plans for sustainable development
- build and strengthen the capacity of developing countries and their national institutions to effectively manage and sustainably utilize their biological resources
- encourage the active involvement of all levels of society, especially local communities, major groups, and NGOs in contributing to the sound management and sustainable use of biodiversity with particular emphasis on the role of women, and
- raise public awareness and disseminate information on biodiversity issues.

UNEP will be guided by two principles in implementing these objectives. First, the management and sustainable utilization of biodiversity will be country-driven. UNEP activities at the country level will be predicated on the good will, involvement and approval of concerned governments. Second, the role of UNEP will be catalytic, participatory, transparent and cost-effective

2.2 Focussing actions on priority needs

To achieve the objectives of the BPIS, the most effective way is through actions that address priority needs in the field of biodiversity. The BPIS has been structured to focus on the following priority needs:

- strengthening the imp-lementation of existing international agreements related to biodiversity conservation, particularly the CBD which is in its initial stage of implementation
- enhancing the performance of GEF in funding priority biodiversity conservation and sustainable use projects at the global, regional, sub-regional and national levels
- improving support to biodiversity research, assessment, data management and monitoring at the global, regional, sub-regional and national levels in support of biodiversity decision-making and management
- promoting actions at the global level providing benefits to all countries in managing their own biodiversity
- strengthening the management of ecosystems and habitats containing a disproportionately high share of the world's terrestrial, freshwater and marine biodiversity
- strengthening the capacity of developing countries and their national institutions in the management and sustainable use of their biodiversity
- assisting developing countries with specially vulnerable ecosystems, particularly those that are predominantly arid and semi-arid and Small Island Developing States (SIDS), in the conservation and management of their biodiversity, taking into account the distinctive kinds of problems which they face
- assisting Governments of developing countries in addressing issues of biodiversity and economics in areas such as trade, transfer and development of technology and economic policy instruments
- developing and promoting concrete examples of sustainable use of biodiversity through pilot projects involving the participation of local communities, groups and NGOs with particular emphasis on the role of women, and
- expanding outreach activities and public information on biodiversity by strengthening the global, regional and national networks involving major groups, NGOs and the media

2.3 Expected results, 1995-2000

Over the 1995-2000 period, the BPIS will seek to achieve a number of concrete results. First, UNEP expects the BPIS to be proactive in addressing emerging issues and major challenges in the field of biodiversity, in which UNEP effectively exercises the leadership role that it has been assigned in Agenda 21. With this programme, UNEP expects:

- enhanced follow-up to Chapters 15, 16 and 38 of Agenda 21, as well as sections of other chapters dealing with biodiversity
- enhanced implementation of existing international agreements related to biodiversity conservation, such as the CBD, CITES, CMS, the Ramsar Convention on Wetlands of International Importance and the Convention Concerning the Protection of the World Cultural and Natural Heritage
- heightened knowledge about biodiversity through greater research, assessment, data management and monitoring at the global, regional, sub-regional and national levels
- increased understanding of biodiversity and economics, including more widespread application of economic policy instruments for biodiversity management and sustainable use
- major increase worldwide in the development and implementation of country biodiversity strategies and action plans through which the integrated management and sustainable use of biodiversity are introduced as regular elements of national sustainable development plans
- more effective implementation of the GEF Operational Strategy for Biodiversity
- improved awareness and better coverage of biodiversity issues in the media

With the attainment of the above, UNEP expects improved management and sustainable use of the earth's biodiversity for the benefit of humanity.

3. PROGRAMME AREAS

Introduction

Actions for meeting the priority needs and objectives of the BPIS and propelling UNEP towards the expected results will be carried out in the following seven areas: (a) the legal framework (support to the CBD and other relevant international legal instruments); (b) biodiversity assessment, research and monitoring; (c) biodiversity and economics (biodiversity and trade, economic policy instruments for biodiversity management, fair and equitable sharing of benefits from the use of biodiversity resources); (d) biotechnology issues, with special attention on biosafety; (e) *in situ* and *ex situ* management of biodiversity (marine, freshwater, terrestrial, and microbiological and genetic resources); (f) targeted capacity building and human resource development, and (g) public awareness and information.

These seven areas are closely linked and a number of on-going and proposed actions of the BPIS are currently being or will need to be coordinated cross-sectorally. For instance, all of the integrated management projects for sustainable development involve legal considerations, assessment, sustainable utilization of biodiversity and conservation. Synergy will be promoted among the different programmatic areas and their respective projects through in-house joint thematic programming and integrated management of information generated by projects.

In general, the seven areas of focus have taken into account the accumulated experience and expertise of UNEP in biodiversity. This does not mean that the proposed actions of the BPIS will be restricted to familiar ground. In a number of cases, this ground will serve as a launching pad for moving into cutting edge issues. Particular emphasis will be put on using the accumulated experience to address emerging issues at the global, regional and national levels.

3.1 Legal framework for biodiversity conservation and sustainable use

3.1.1 Supporting the Convention on Biological Diversity

The preparation, negotiation, elaboration and adoption of the CBD was achieved under the aegis of UNEP. It is the culmination of UNEP's commitment and efforts, in cooperation with other international organizations, initiated in 1988, to enhance the protection of the world's biodiversity through a legally-binding instrument signed by Governments.

UNEP's contribution to the negotiating process of the Convention and preparations for the first meeting of the Conference of the Parties in November 1994 has been substantial both in technical and financial terms. Technical support was provided primarily through the different units of the UNEP's Terrestrial Ecosystems Branch (TEB), as well as from the Environmental Law and Institutions Programme Activity Centre (ELI/PAC).

In general, the BPIS is complementary to the objectives, measures, issues and actions contained in the CBD. There are a number of areas identified in this chapter where UNEP will particularly contribute to the implementation of the CBD. These are described in greater detail further down. However, its proposed support to the Secretariat of the CBD, the provision of supportive legal advisory and technical cooperation services, and the

BOX 4. UNEP support to the Convention on Biological Diversity

In June 1988 the UNEP Governing Council requested that the Executive Director, in consultation with the Governments, "establish an ad hoc working group of experts to investigate, in close collaboration with the Ecosystem Conservation Group and other international organizations, the desirability and possible form of an umbrella convention to rationalize current activities" in the field of biodiversity, "and to address other areas which might fall under such a convention". Three sessions of the Working Group were held between November 1988 and July 1990.

In May 1989, the Governing Council authorized the Executive Director to convene an ad hoc working group of legal and technical experts to negotiate an international legal instrument for the conservation of the biodiversity of the planet. The Ad Hoc Working Group held two negotiating sessions in Nairobi in November 1990 and February-March 1991. In May 1991, the Council renamed the Ad Hoc Working Group the "Intergovernmental Negotiating Committee (INC) for a Convention on Biological Diversity". Five negotiating sessions were held under the new name, culminating with the adoption of the CBD and the signing of the Final Act in Nairobi on 22 May 1992. UNEP was able to solicit enough support so that two delegates from each developing country requesting assistance, including those from economies in transition, could participate in each session.

The Conference for the Adoption of the Agreed Text of the Convention on Biological Diversity adopted several resolutions calling for action during the period between the Convention's signature and its entry into force. Resolution 2 invited UNEP to convene meetings of an Intergovernmental Committee on the Convention on Biological Diversity (ICCBD) to consider issues raised in the resolution. The ICCBD was established in May 1993 and held two sessions (in Geneva in October 1993 and in Nairobi in June-July 1994).

To prepare for the Committee's first meeting, UNEP Executive Director in November 1992 established four panels to prepare scientific advice on issues identified in Resolution 2. The panels covered: (a) priorities for action for conservation and sustainable use of biodiversity and an agenda for scientific and technological research; (b) evaluation of potential economic implications of conservation of biodiversity and its sustainable use and valuation of biological and genetic resources; (c) technology transfer and financial issues; and (d) the need for elements for inclusion in and modalities of a protocol for transfer, handling and use of any living modified organisms resulting from biotechnology.

With the support of UNEP, the Open-ended Intergovernmental Meeting of Scientific Experts on Biological Diversity was held in Mexico City in April 1994. The meeting produced an Agenda for Scientific and Technical Research for the consideration of the second meeting of the ICCBD and subsequently by the first meeting of the Conference of the Parties (COP).

Resolution 2 also requested the Executive Director of UNEP to provide, on an interim basis, the Secretariat for the CBD. Between October and November 1994, UNEP in collaboration with the Interim Secretariat organized regional consultations of Governments to provide developing countries the opportunity to address in greater detail issues of common concern under the CBD.

From 1990 to 1992 UNEP's direct expenditures on the preparation and negotiation of the CBD amounted to over US$5 million. An additional US$1.1 million in counterpart contributions were received. By 1994, UNEP has provided over US$1 million for the meetings of the ICCBD. These figures do not reflect indirect costs in terms of UNEP staff time in support of the CBD and the Interim Secretariat as well as other research and information dissemination activities aimed at furthering the objectives of the CBD.

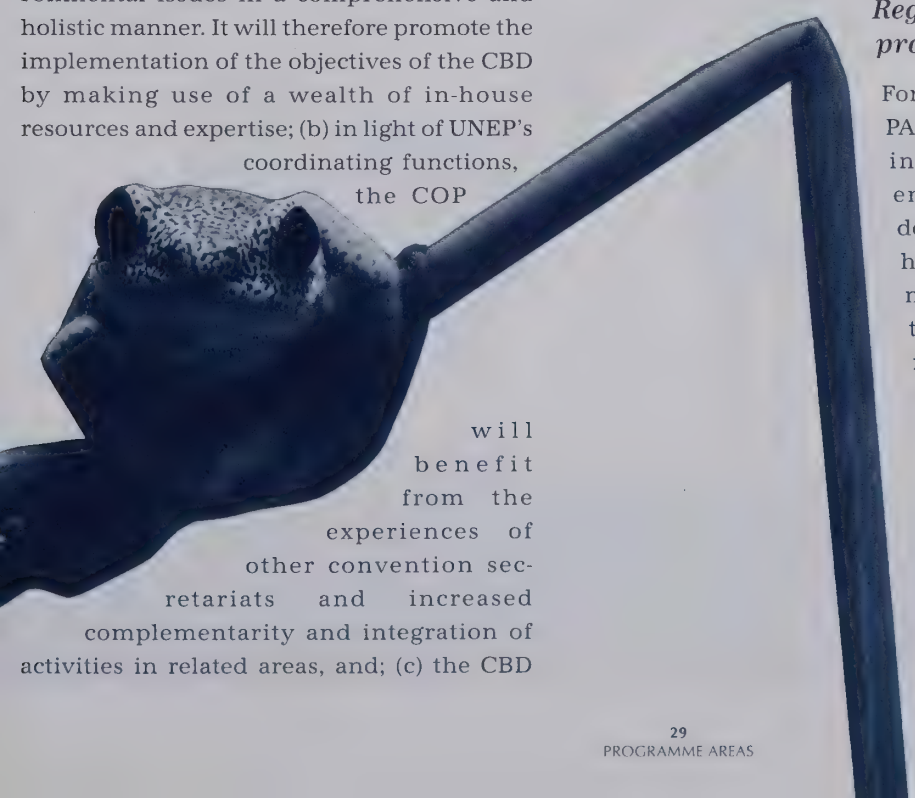
preparation of biodiversity country studies are exclusively linked to the CBD's implementation.

The Secretariat of the Convention on Biological Diversity

At its first meeting held in Bahamas, the COP of the CBD designated UNEP to perform the secretariat of the CBD. The valuable experience gained by UNEP is providing secretariat functions to conventions has placed the agency in a strategic position to advise and support the Secretariat of the CBD in its operations and in working towards achieving CBD's objectives. UNEP has accumulated significant experience in successfully and cost-effectively administering a number of major environmental convention secretariats and is one of the implementing agencies of the GEF, which is expected to provide financial resources for the implementation of the CBD.

Proposed actions:

UNEP is hosting the permanent Secretariat of the CBD and is committed to giving its fullest support to the CBD's successful implementation. To this end, it will fully cooperate and coordinate with the COP and all relevant UN agencies. The CBD will benefit from its association with UNEP for a number of reasons: (a) UNEP is in a position to deal with global, complex and cross sectoral environmental issues in a comprehensive and holistic manner. It will therefore promote the implementation of the objectives of the CBD by making use of a wealth of in-house resources and expertise; (b) in light of UNEP's coordinating functions, the COP will benefit from the experiences of other convention secretariats and increased complementarity and integration of activities in related areas, and; (c) the CBD will benefit from UNEP's mandate to further develop international environmental law.



UNEP is undertaking a comparative study of implementation mechanisms on the basis of practical experience and information provided by the secretariats of UNEP-administered conventions with a view to enhancing implementation mechanisms of international environmental law. This study will assist UNEP to improve its secretariat functions.

Support to the Secretariat will be provided in the form of technical inputs in the work of the secretariat, administrative support systems, data and information services, conference services and temporary cash advances. UNEP maintains close links with and provides support to WCMC which provides data management support to some of the above conventions.

The Secretariat will be functionally independent and will be guided by the policies set out by the COP. However, it will work closely with UNEP at the practical level. This relationship will be established and regulated by appropriate organizational and administrative arrangements agreed upon by the COP. A politically and legally distinct Secretariat but one that works closely with UNEP provides for the most cost effective operation of the Secretariat and implementation of the CBD.

Regional legal training programmes

For several years, UNEP through ELI/PAC has provided technical cooperation in the preparation of national environmental legislation for the developing countries. Special attention has been given to the development of national legislation that complements the application of international legal instruments. For example, since 1990, when requested by Governments, ELI/PAC and ROLAC have collaborated in assisting the countries of the Latin American and Caribbean region in elaborating supportive national legislation for the implementation of the Basel Convention. Similar activities are carried out in Africa.

Proposed actions:

UNEP will initiate regional legal training programmes in support of the CBD. These will include: (a) identification of options on how to integrate the provisions of the CBD into national legislation; (b) an analysis of the benefit of being a party, for those considering ratification; (c) an examination of the legal implications of the CBD at the domestic level, for those that are contracting parties; and (d) an analysis of the relationship between the CBD and other global and regional agreements to which Governments might be a party. At the domestic level, if so requested, Governments on a case by case basis will be advised on national legal provisions which should be considered in determining how obligations under the treaty can be met.

UNEP will also support the strengthening of environmental legislation infrastructures in selected regional, sub-regional and national centres of excellence in developing countries, including the establishment and development of biodiversity legal databases, so that these centres can support capacity building in biodiversity legislation in their respective regions.

Biodiversity country studies

Since 1991 UNEP, with additional funding from GEF, has supported and assisted Governments prepare biodiversity country studies consisting of: (a) assessment of the status of biological resources in the country, (b) identification of priority needs and areas requiring action, (c) identification of necessary measures for the management and sustainable utilization of biodiversity, (d) assessment of the costs and benefits associated with the implementation of such measures and (e) estimation of additional funding required for implementing these measures.

The preparation of the studies was proposed by the INC; they were structured to assist in identifying the funding needs of countries required for the implementation of the CBD, and to provide elements for estimating the total cost of implementing the CBD. They will serve as a basis for developing national biodiversity strategies and action plans in the framework of the CBD, and for enhancing national capacities in methodologies for estimating the costs and benefits of biodiversity management.

The country studies also aim to promote understanding of biodiversity issues, as well as support in this area, among decision makers, educators, professionals, practitioners and the general public. One of the main aims of the countries studies is to promote the implementation of the CBD at the national level.

Proposed actions:

UNEP, in collaboration with WCMC, will continue to support the preparation of country studies, utilizing the new guidelines adopted in May 1993, as a contribution to the effective implementation of the CBD. These guidelines deal mainly with the national assessment of the status of biodiversity, including needs, management costs and benefits to be derived. These national assessments relate directly to Articles 6 and 7 of the CBD. Twelve country studies have been completed and 20 others are at various stages of preparation. Depending on the availability of funds, 25 country studies have been planned for the 1996-1997 biennium.

The next step in the preparation of country studies will consist of the formulation of biodiversity strategies and action plans, including

BOX 5. Biodiversity country studies

Since its inception, 34 countries have participated in the UNEP country studies project; 16 country studies have been completed and 18 are still under preparation. Twenty other countries have expressed interest to participate in the project. The studies cover the full range of national biodiversity and ecosystems, as well as assessing the benefits and costs of conserving this biodiversity. The interest in the project reflects the general recognition that without the framework of a country study to define needs and priorities, investments in biodiversity conservation might be of only limited value. The project is critical to bringing consistency and cohesion to the national and international efforts to conserve biodiversity.

The need for national assessments of biodiversity was recognised early in the negotiating for the CBD. In February 1990, the UNEP Ad Hoc Working Group of Legal and technical Experts on Biological Diversity recommended the preparation of country specific studies on "the costs, benefits and unmet needs for conservation and sustainable use of biological diversity". These assessments were seen as essential both (a) nationally, to be able to determine priorities in the allocation of scarce financial, technical and physical resources, and (b) globally, to estimate the overall financial requirements for conserving the world's biodiversity. Building on this analysis, Resolution 2 of the Conference for the Adoption of the CBD held in Nairobi in May 1992, noted the importance of country studies in the preparation of national strategies and action plans.

The dual objectives of the project are to support the preparation of country studies, and through this process to enhance the capacity of developing countries in biodiversity assessment and planning. Main project outputs are the completed country case studies, and also refined methodological Guidelines for carrying out such studies. Twenty-four countries agreed to undertake national case studies as part of the project; several were already underway at project commencement in march 1992, using other than GEF financing. Ten countries submitted their completed reports in 1992.

A second phase of the project, with additional GEF funds, was approved in June 1994. The ultimate objective of the project goes beyond country studies. While the studies are valuable in themselves, they are also the first step in a four-step cyclical process supporting implementation of the CBD: (a) taking stock; (b) preparing national strategies and action plans; (c) implementing the plans; and (d) evaluating effectiveness.

Completed reports prove to be useful to both scientific and technical personnel, as well as to decision-makers for establishing biodiversity conservation priorities. Preparing the country studies has also laid a firm foundation for building national capabilities for developing biodiversity strategies and action plans. Linkages of the studies to the requirements of the National Environmental Action Plans (NEAP) to measures required by the CBD are being developed. Also being developed are linkages with the actions recommended under the Global Biodiversity Strategy. Several National Biodiversity Units are involved in strengthening or establishing permanent biodiversity monitoring operations.

Following the completion of the first 10 country studies, UNEP's Expert Advisory Team recommended that the 1991 guidelines for the country studies should be revised in the light of the experience to date, in particular to focus more on the compilation of biological and economic data to reinforce the biodiversity planning process. UNEP completed revising *Guidelines for Country Studies on Biological Diversity* in July 1993.

WRI, in cooperation with IUCN and UNEP has prepared the *National Biodiversity Planning: Guidelines Based on Early Experiences Around the World* which has already been published. UNEP, the World Bank and the United Nations Development Programme (UNDP) have agreed to use the document for guiding countries to prepare national strategies and action plans for biodiversity conservation.

objectives, priorities, resource requirements, and more detailed evaluation of resource needs and benefits of sustainable use measures. This activity is relevant to Articles 6 and 10-14 of the CBD. The guidelines for this step of the country study process have been developed by UNEP in cooperation with WRI and IUCN and with funding from UNEP and the Swedish International Development Cooperation Authority (SIDA). With these guidelines, UNEP will initiate a project to support the preparation of national biodiversity strategies and action plans.

3.1.2 Assisting other relevant international legal instruments

There are over 40 regional and international treaties worldwide dealing with *in situ* conservation of biodiversity. With the entry into force of the CBD and the United Nations Convention on the Law of the Sea (November 1994), there are now seven major global conventions dealing largely with biodiversity. In addition to CITES and CMS, there is the Ramsar Convention on Wetlands of International Importance, the Convention Concerning the Protection of the World Cultural and Natural Heritage and the International Convention for the Regulation of Whaling, serviced by the International Whaling Commission (IWC).

Moreover, strong links exist between the CBD and the Framework Con-vention on Climate Change. Chapter 38 of Agenda 21 emphasizes that UNEP should concentrate on "co-ordinating functions arising

from an increasing number of intern-ational legal instruments", and should take into account the need for the most efficient use of resources in the functioning of the respective secretariats in line with the co-location principle put forward in Agenda 21.

UNEP services the secretariats and administers the trust funds of a number of international conventions related to biodiversity, including CITES and CMS, in addition to the secretariats and trust funds of regional instruments. In the early years of implementation of CITES and CMS, it provided funding to support the imple-mentation of their respective programmes, which continued until the trust funds for the two conventions were established by the UNEP Governing Council. Today, when requested, UNEP has been providing funding for developing country participants and offering technical inputs into documents and reports prepared by the secretariats.

Proposed actions:

UNEP is exploring the feasibility of esta-blishing a synergy mechanism on bio-diversity-related conventions. This mechanism could serve to promote coordination and cooperation in the implementation of the respective work programmes of the agreements, where complementarity exists. It would also be well placed to address emerging issues in biodiversity and their relevance to other conventions. Its initial focus would be on the major global conventions, but could eventually be ex-panded to include key regional conventions and protocols. Thr-ough this mechanism, UNEP will assist governments in drafting supportive, complementary national legislation.

3.1.3 Furthering biodiversity-related international environmental law

The Commission for Sustainable Development (CSD) at its 1995 session established an Inter-governmental Panel on Forests which will operate under the Department of Policy Coordination for Sustainable Development (DPCSD) of the United Nations. The overall aim of the panel is to look into ways of implementing the Forest Principles in Agenda 21 and to report its findings at the 1997 CSD. In light of its prior experience in scientific and political consensus-building, UNEP will be in a favourable position to function as a key partner in the work of the Panel. Other agencies servicing the Panel include FAO, UNDP and the International Timber Trade Organization (ITTO).

UNEP has a very important functional role in the Panel as recognized by governments which requested UNEP to play an active role in the Panel. The major task of the Panel is to pursue consensus

BOX 6. UNEP and the Intergovernmental Panel on Forests

The issues being addressed by the Inter-governmental Panel on Forests are related to the provision of the CBD. Indeed, Artcle 6(b) calls upon governments to "integrate, as far as possible and as appropriate. the conservation and sustainanble use of biological diversity into relevant sectoral and cross-sectoral plans, programmes and policies." UNEP will bring to the Panel its accumulated experience in consensus building to facilitate dialogue on forest management issues. UNEP has over the years established networks with organizations, centres of excellence and individual experts within and outside the UN system concerned with forest issues. UNEP will use the network to support the Panel in various ways.

The first area will be in the field of policy reform. Achieving improved conservation and management of global forest resources will require reforms in national laws, land tenure regimes, fiscal policies and macro-economic setting. UNEP will use its experience in raising high-level policy awareness to contribute to the formulation of policies for the effective conservation of global forests. It will contribute to environmental policy dialogue on developing improved institutional and political mechanisms for ensuring that such policy reforms are put in place.

In the area of trade and the environment, UNEP will support and participate in conflict resolution activities so as to reach compromises on politically-sensitive issues. These include reaching a common understanding on the adoption by the Panel of harmonized criteria indicators and ecolabelling practices to ensure that all logging and trade in forest products are derived from forests that are certified to be under sustainable management.

Should the Panel decide to look for a framework for an international agreement on forests, UNEP will do an analysis of existing conventions to identify gaps where forest issues are not adequately analyzed. If Governments so decide, this could lead to the development of a forest protocol linked to one of the conventions or even a separate international agreement on forests.

and formulate coordinated proposals for action.

Proposed actions:

UNEP will work with other UN agencies and international organizations in providing technical support and back-stopping to the IPF established in 1995 by the CSD. UNEP's role in the Panel will include promoting scientific consensus-building and providing technical inputs. So far five issues for priority action are identified for the Panel. UNEP is well positioned to take the lead role in any three of the five issues: examination of sectoral and cross-sectoral linkages; technology transfers; trade and environment; legal mechanisms. UNEP will provide scientific backstopping from its headquarters in Nairobi for the Panel. UNEP will draw from its network of centres of excellence and individual consultants to do studies on behalf of the Panel.

3.2 Biodiversity assessment, research and monitoring

Decision-making on the protection and management of bio-diversity should be based on adequate, reliable and relevant scientific and technical data and information from fields such as biology, anthropology, sociology and eco-nomics. The data and information generated must also be gathered and analyzed in a systematic and comp-rehensive manner in support of biodiversity conservation and management. Decisions on which ecosystems, species, strains or pop-ulations should be conserved must be based on reliable information and objective criteria.

Monitoring and assessment at the global, regional and national levels are fundamental for evaluating the changing status of biodiversity and the effectiveness of conservation and management activities. For data and information to be comparable and usable, harmonization of information standards and monitoring methodologies are essential.

3.2.1 Assessing and monitoring global biodiversity

UNEP, together with IUCN and WWF established the World Conservation Monitoring Centre (WCMC) in Cambridge in 1988 to provide information services on the

conservation and sustainable use of species and ecosystems and to support others in the development of their own information management services. It is internationally recognized as a centre of excellence in the handling and management of information on biodiversity conservation.

With the support of GEF and in close collaboration with several IGOs and NGOs and the international scientific community, UNEP launched the Global Biodiversity Assessment (GBA) project which has mobilized a cross section of the global scientific community to provide an independent, critical, peer-reviewed, scientific analysis of the current issues, theories, views and state of knowledge concerning the main aspects of biodiversity.

A preparatory meeting was held in Montreal 15-16 March 1993, with the first meeting of the GBA Steering Group taking place in Trondheim, Norway from 31 May to 2 June of the same year. The preparation of each section of the Assessment is carried out by a team of 10 to 20 scientists and reviewed by a larger group of scientists working in biodiversity.

Improved biodiversity data management is a prerequisite to successful conservation strategies and action plans. In June 1994 UNEP initiated the Biodiversity Data Management Capacitation in Developing Countries and Networking Biodiversity Information (BDM), a major initiative implemented in collaboration with WCMC and Governments with funding from the GEF. Its objective is to improve the availability of reliable, up-to-date scientific information to support biodiversity management and planning in developing countries.

The project contributes to the implementation of Article 7 of the CBD, on the identification and monitoring of the components of biodiversity, including activities which

BOX 7. The World Conservation Monitoring Centre

WCMC manages global databases on the status of endangered animals and plants, protected areas systems, habitats such as forests, wetlands and coral reefs, and the trade in wildlife and wildlife products. It utilizes global computerized communications to reach out to users, and is advanced in the use of mega-databases and the construction of information systems. It has developed a large GIS-based Biodiversity Map Library, a copy of which is held and used by UNEP-GRID, FAO and the World Bank.

The Centre collaborates widely within the UN family and, for example, analyzed forest resources in protected areas as a contribution to the FAO Forest Resources Assessment 1990 project. In 1991 WCMC produced the 3-volume World Directory of National Parks and Protected Areas, and every 2-3 years it compiles the UN List of National Parks and Protected Areas. WCMC compiled the 3-volume *Coral Reefs of the World* in 1991 on behalf of UNEP.

WCMC regularly produces Red Data Books and Red Lists of the world's threatened species, and in 1992 published the first of a series entitled the *Global Biodiversity: Status of the Earth's Living Resources* in collaboration with the Natural History Museum of London and in association with UNEP, IUCN, WWF and WRI. The report represents the first comprehensive overview of the status, use and management of global biological resources. It provides the information base for analysis and follow through on the implementation of *Caring for the Earth* and its subset, the *Global Biodiversity Strategy*. The Centre is finalizing a 130-page updated *Biodiversity Data Sourcebook*.

WCMC manages data in support of several international conventions. On behalf of CITES, the Centre manages and compiles all data presented by the Parties in annual reports, and regularly analyzes trade levels. On behalf of UNESCO, WCMC manages the database on World Heritage Sites under the Convention Concerning the Protection of the World Cultural and Natural Heritage. The Centre holds the GIS database of the Ramsar List of Wetlands of International Importance, and has contributed extensively to the Bern Convention on the Conservation of European Wildlife and Natural Habitats. With British Antarctic Survey and Scott Polar Research Institute, WCMC produced in 1993 an Antarctic Digital Database in support of the Antarctic Treaty and is now compiling Arctic data as a contribution to the Committee on Arctic Flora and Fauna (CAFF).

To support the CBD, WCMC contributed technical advice to all preparatory meetings, and has prepared reports on *The Clearing-house Mechanism* and *Priorities for Conserving Global Species Richness and Endemism*. WCMC actively supports development of in-country information management and national biodiversity data units, and is the hub of a network of organizations preparing guidelines and materials for capacity building. These activities build on the collaboration between WCMC and UNEP on the development of *Guidelines for Country Studies on Biological Diversity*.

may have negative impacts. Specifically, the project helps to build the capacity of developing countries in data management to support the implementation of the CBD.

The project builds on the biodiversity country studies process and focusses on strengthening the National Biodiversity Units (NBUs) and other national bodies that are generating and storing biodiversity data. The country studies exercise has revealed that the data compiled has not been transposed into proper database formats for storage, retrieval, processing and utilization. UNEP will use the GRID Meta-database, a public database of numeric data sets on a wide range of environmental themes at different levels, as well as UNEP-INFOTERRA expertise on networks for data access and dissemination to address this problem.

UNEP will involve specialized institutions from developing and developed countries to assist in strengthening national biodiversity information management activities in developing countries.

Monitoring *per se* is no longer the major activity of UNEP's Environment Assessment Programme. The programme now aims to keep under review and enhance knowledge about the state of the environment and its linkages with development and socio-economic issues to provide information for decision-makers. The programme has four closely interwoven substantive components: (a) assessment and reporting (GEMS); (b) data management, harmonization and dissemination (GRID); (c) regional institutional capacity building and servicing for environmental information networks (ENRIN); and UN system-wide Earthwatch Coordination.

UNEP has supported the establishment and development of the Biodiversity Information Network 21 (BIN21). The network is an important initiative for facilitating the exchange of information, from molecular to biosphere, in data banks and other sources worldwide.

Proposed actions:

Through the UNEP project Institutional Support to the WCMC, the following

BOX 8. Earthwatch: The UNEP environment assessment programme

In 1975 UNEP established the Global Environmental Monitoring System (GEMS) Programme Activity Centre which linked existing monitoring systems in place at the international and national levels, both within and outside the United Nations system. In the ensuing years, UNEP's Earthwatch through GEMS and the Global Resource Information Data Base (GRID), established in 1985, has carried out a substantial amount of work in assessment and data management. In addition to strengthening the monitoring activities of partner agencies, special attention was given to improving the reliability and compatibility of data for the use of developing and developed countries. The Environment Assessment Programme has worked on a variety of biodiversity related activities. They have included support to tropical forest monitoring and assessment with FAO, the EU and others; support to global assessments and national case studies with IUCN, UNESCO and WWF; and biodiversity database exchanges with WCMC, IUCN and NGOs. Biodiversity data sets prepared by WCMC are also housed in UNEP/GRID.

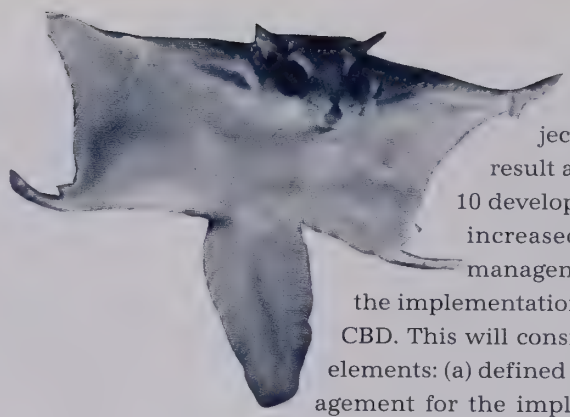
A number of case studies are carried out by various GRID cooperation centres. In 1991, an agreement was signed with the Instituto Nacional de Pesquizas Espacias (INPE), the Brazilian national space research agency, for the establishment of GRID-Sao Jose dos Campos. This facility provides data on vegetation cover and deforestation in the Amazon region. A similar agreement was signed for the establishment of GRID-Moscow which will provide data on boreal forests. GRID-Nairobi recently prepared a map of phytogeographical divisions for Africa illustrating, *inter alia*, the distribution of plants in terms of genetic adaptability. GRID-Nairobi also collaborated with IBPGR in a project to survey flora, map vegetation and collect germplasm samples of Socotra, a 3,000 km^2 island in the Indian Ocean. The preparation by GRID-Bangkok of data sets on Western Samoa, utilizing ecosystem maps prepared by the Pacific Conservation Data Centres of the Nature Conservancy, is another example of a GRID national case study.

One of UNEP's most successful projects has been the GRID African Elephant database study, in collaboration with WWF, EU and the Elsa Wildlife Trust. The objective of the project is to provide policy makers in African countries with badly needed data for the conservation and management of populations of this important endangered species, including valuable data and information on the range of African elephants, population numbers and densities, and factors contributing to population trends throughout the range. Through the use of state-of-the-art GIS analytical tools, estimates are made for range sectors which have not been surveyed. The database is utilized by the CITES Secretariat.

proposed actions will be carried out under the BPIS:

- continuing the Global Biodiversity Status Reports is a priority activity of the BPIS as they contribute to the implementation of actions set forth in Chapter 15 of Agenda 21 on the periodic updating of world reports on biodiversity and the provisions of Article 7, on identification and monitoring, of the CBD. UNEP will support this activity through the year 2000.
- regular publication and expansion of the format of the UN List of National Parks and Protected Areas is a priority in implementing the wishes of the UN General Assembly, the World National Parks Congress and Agenda 21, as well as assisting in Article 7 of the CBD on *in situ* conservation.
- WCMC Information Services to users worldwide will be strengthened and expanded, particularly through the use of Internet, clearing-house mechanisms and data exchange.
- WCMC Biodiversity Map Library will also be strengthened and networked as an integrated system for storing and managing data for application in modelling, planning and emergency response.
- WCMC's capabilities in training and technical assistance for the development of national biodiversity data management systems will be strengthened, particularly as regards the conversion of NBUs into effective National Biodiversity Monitoring Centres.

Support for the GBA is a priority activity for UNEP. The main text of the GBA and a Policy-Makers Summary were completed in 1995. The GBA will be addressed to a wide audience which includes international, regional, and national environmental organizations, both governmental and NGOs, as well as policy-makers and scientists working in the field of biodiversity. In particular, the GBA will serve as a basis for decision-making to meet the objectives of the CBD as well as Agenda 21. It will be an important tool for the Subsidiary Body for Scientific and Technological Advice (SBSTTA) of the CBD.



The BDM project has as a principal result an initial tranche of 10 developing countries with increased capacity in data management in support of the implementation of Article 7 of the CBD. This will consist of the following elements: (a) defined needs in data management for the implementation of the CBD; (b) strengthened capacity for accessing, managing, applying and disseminating national biodiversity data and inform-ation; (c) programmes for data and information collection and management; (d) enhanced capacity in utilizing appropriate technologies; (e) establishment of a national network on biodiversity data and information; and (f) access to guidelines and standards for data management, appropriate technologies and related know-how, required technical assistance, and global and regional datasets.

These elements will be integrated into national plans for the management and application of biodiversity data in support of the CBD in particular and policy-making in general. To facilitate the preparation of the plans, the following supportive materials will be prepared: (a) guidelines for the preparation of an institutional survey on existing capacity, (b) a generic data flow model for maximizing the potential use of information collected, (c) a series of basic guidelines for efficient information management practices and (d) an inventory of existing analytical resources for system implementation. For each country, funding needs for the full implementation of biodiversity data management plans will be identified.

The Environment Assessment Programme has initiated activities which will continue to be important elements of its work place under the BPIS. These include: (a) collaborating with TEB and WCMC in the definition of standards for national biodiversity data management within the framework of the BDM project, and; (b) preparing and reviewing inputs for the Global Biodiversity Assessment.

The Environment Assessment Programme will continue to collaborate closely with OCA/PAC to produce an atlas and geographic information system (GIS) decision-making tool for East Africa for the management of biodiversity resources in coastal areas. It will

also continue to upgrade the elephant database into a decision making tool.

For the preparation of the biodiversity country studies, NBUs were set up in collaboration with WCMC, to coordinate the compilation of data for assessing the status of biodiversity. These NBUs will be converted into National Biodiversity Monitoring Centres responsible for collecting, storing and analyzing national data and information on biodiversity, including relevant political, legal and economic developments. They will be integrated into a global Biodiversity Information Network (BIN21) for assessing on an on-going basis the changing status of the earth's biodiversity.

This network will form part of Earthwatch's Environmental and Natural Resource Information Networks Programme (ENRIN). For greater efficiency and effectiveness, the network will be structured along regional lines and coordinated through UNEP's regional Environmental Assessment Sub-programmes.

BIN21, through its centres, will also function as an early warning system for threats to biodiversity. The setting up of the early warning component of the network will be carried out in consultation with IUCN and other international and national partners. Its purpose is to monitor potential threats to biodiversity and mobilize action against them, and will be linked to the CBD.

Existing database structures in Earthwatch for the promotion of data exchange and networking will be amplified in the area of biodiversity data and information. The Environment Assessment Programme will aim at enhancing knowledge about biodiversity within the overall context of the state of the environment and its linkages with development and socio-economic issues, to provide information for decision-makers.

UNEP will continue to support the development of the BIN21 as a comprehensive network for accessing authoritative sources of information on world biodiversity and as an effective mechanism for person-to-person and institution-to-institution exchange of information and ideas.

Through the GEF Operational Strategy on Biodiversity, attention will be given to the identification, review and implementation of projects in support of global, regional, sub-regional and national assessments of biodiversity.

BOX 9. Biodiversity Information Network 21 (BIN21)

In July of 1992, UNEP jointly with the International Union of Biological Sciences (IUBS), the International Union of Microbiology Societies (IUMS) and the World Federation of Culture Collections (WFCC), and with the financial support of the Brazilian Institute of Environment and Renewable Natural Resources, other Brazilian agencies and the British Council, held the International Workshop on the Needs and Specifications for a Biodiversity Information Network at the Tropical Data Base (BDT) in Campinas, Sao Paulo, Brazil. This meeting initiated work on the creation of the Biodiversity Information Network (BIN21). The purpose of BIN21 will be to facilitate the access, by electronic means whenever possible, to all levels of information, from molecular to biosphere, in data banks and other sources throughout the world. The network will also serve to assess knowledge within the disciplines of botany, zoology and microbiology with a view to identifying new research essential for informed policy decisions. BIN21 will focus on global biodiversity information required for the implementation of Chapters 15 and 40 of Agenda 21 and the CBD.

UNEP and the Brazilian Government funded a second workshop at the same venue in February 1994. It reviewed a proposal for implementing BIN21 presented by representatives of the Australian National University and the Australian National Botanic Gardens. The meeting also reviewed progress in the establishment of the network, which is now coordinated by a permanent secretariat hosted by BDT, and to discuss cooperative strategies for enhancing global access to biodiversity information. Ten nodes participate in the network: three in Australia and one each in Brazil, Costa Rica, Ecuador, Finland, Italy, the United Kingdom and the United States. WCMC plays is an active node of the network.

Information incorporated into the network is being divided into the following categories: bibliographies; biodiversity programmes and project descriptions; conservation information and programmes; contact registers for organizations, people and projects; DNA/molecular/genetic; ecosystem history and historical reconstruction; educational materials; environmental background materials; environmental legislative information; genetic resources information; geopolitical information; global climate change information; on-line databases of site, survey and point locality information; regional information; and research and management tools.

3.2.2 Management-oriented and problem-focused research

Since 1991, UNEP support in this area has increased as demonstrated by the following examples. In one UNEP-funded project, implemented by Scientific Committee on

BOX 10. Assessment of biodiversity and microclimate of the tropical forest canopy

UNEP, in collaboration with STRI as the implementing agency, the Patronato of the Metropolitan Nature Park of Panama City and several donors, including the Governments of Norway, Finland and Germany, is supporting a large scale project on the Biological Diversity and Microclimate of the Tropical Forest Canopy. The purpose of the project is to monitor and research the biodiversity of the canopy and investigate the interaction between the forest canopy and atmospheric changes, utilizing a revolutionary crane access system. In terms of biodiversity and interaction with the atmosphere, the canopy is the most important part of a tropical forest. It is estimated that 40% or more of the world's species of plants and animals may be living in the uppermost canopy of tropical forests.

Scientists from Argentina, Austria, Canada, China, Colombia, Costa Rica, Germany, Israel, Japan, Mexico, Panama, Switzerland, the United States and Venezuela have been working on 25 interlinked projects utilizing an innovative tower crane access system. The project has generated data and information on the biodiversity and biology of plants and animals in the canopy and on the interactions between the forest canopy and the atmosphere in six programme areas: (a) biodiversity, (b) biotic interactions, (c) energy exchange, (d) microclimate and its effects on plant responses to variation, (e) plant responses to variation in carbon dioxide and (f) plant responses to variation in ultra-violet radiation. In November 1995, UNEP and STRI published *Accessing the Canopy*, the first major report of the project.

The project also has a large training component involving graduate students from a number of developing countries who are supervised directly by STRI scientists. Scholarships and fellowships are provided principally by private sector donors such as the Andrew Mellon Foundation, the Smithsonian Associates and the Smithsonian Institution's Scholarly Studies and Visiting Investigators programmes, among others.

Problems of the Environment (SCOPE) in association with the USSR Commission for UNEP (UNEPCOM), the Russian Academy of Science and UNESCO, the scientific management of ecotones and their role in biodiversity conservation has been studied.

This is an important but neglected area of both research and the development of conservation approaches. The project on Assessment of Biodiversity and Microclimate of the Tropical Forest Canopy is generating information relevant to the implementation of the CBD and the United Nations Framework Convention on Climate Change (UNFCCC), as well as for the management of tropical biodiversity.

With the adoption of the GEF Operational Strategy on Biodiversity, UNEP, as the implementing partner responsible for technical aspects, plays an important role in the identification, review and implementation of scientific research and assessment projects in support of the implementation of Agenda 21 and the CBD.

Proposed Actions:

Through the BPIS, greater emphasis will be given to supporting management-oriented and problem-focused research in support of decision-making and environmental management. UNEP does not pretend to promote research across the biodiversity board. Where the opportunities appear for the organization to promote critical research required for management and decision-making, with the right centres of excellence and favourable funding perspectives, it will do so both directly and indirectly. Emphasis will be placed on those projects that have strong components for training researchers, specialists and managers from developing countries. Greater consideration will be given to involving centres of excellence in developing countries in the implementation of these actions.

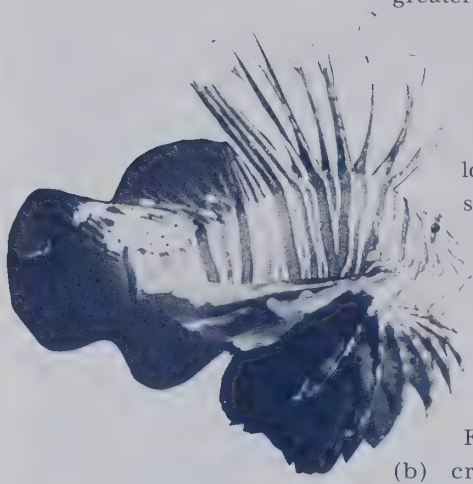
Concerning specific projects, Phase 2 of the Tropical Forest canopy project will be implemented, including the establishment of a tower crane access system in a wet forest of the Caribbean coast of Panama to complement current monitoring and scientific studies carried out in the canopy of the dry tropical forest of the Metropolitan Nature Park on the Pacific side.

BOX 11. The Mpala Research Centre

In 1994, in partnership with the Mpala Wildlife Trust (MWT), comprised of the Mpala Wildlife Foundation, the National Museums of Kenya, the Kenya Wildlife Service, the Smithsonian Institution and Princeton University, the project "Support for the Establishment of an East African Research Centre for the Integrated Management of Wildlife and Domestic Animals in the Savanna and Semi-arid Rangelands" was initiated. The project will address the critical needs of East African savanna and semi-arid woodland ecosystems through the establishment of the Mpala Research Centre. Special attention will be given to the interactions of livestock, particularly cattle, with wildlife and their combined effects on plant communities and soils. Purpose-oriented research will be aimed at the development of sustainable rangeland management systems that accommodate both cattle grazing and wildlife conservation, and which can be promoted among the surrounding communities.

Three high priority areas have been identified which require immediate attention in order to catalyze the proposed programmes at Mpala: (a) an interim fellowship programme which will involve students from Kenya and the rest of East Africa in Mpala research programmes from the beginning and which will allow East African students the opportunity to pursue graduate studies in relevant fields in universities in the United States; (b) the development of a master plan for the Mpala Research Centre; and (c) the construction of basic living and research facilities. MWT believes that field oriented training combined with graduate studies at major universities is crucial in order to prepare the next generation of African, particularly East African, ecologists and resource managers specialized in African savanna and semi-arid woodland ecosystems. The field training component will be financed by Citibank with funding for graduate studies in universities in the United States provided by Princeton University and the Smithsonian Institution.

The Smithsonian Tropical Research Institute (STRI) in collaboration with UNEP will organize a Conference on the Biodiversity and Ecology of the Tropical Forest Canopy for November 1996 which will have four objectives: (a) review the findings of the project, (b) promote dialogue and exchange of ideas among tropical forest canopy researchers, (c) assess the relevance of the studies to decision-making and environmental management and (d) recommend areas of monitoring and research which require greater attention.



A key activity is to prepare a Master Plan for the Mpala Research Centre detailing (a) the short to long-term activities of the research, environmental management, training and information programmes, as well as the operational and management pro-grammes for the 5,021 acre Mpala Founda-tion Property; (b) criteria and norms for research; (c) funding requirements for programmes, infrastructure and staff; and (d) linkages with other research, resource management and education organizations in Africa in order to maximize the practical value of studies at Mpala and elsewhere.

Priority will be given to the successful implementation of the GEF Operational Strategy on Biodiversity as regards management-oriented and problem-focused research.

3.3 Managing biodiversity

UNEP has done considerable work on the protection and sustainable use of individual species and their genetic resources and on the conservation of the habitats in which they live. Biodiversity conservation is carried out at various levels: (a) ecosystems and biogeographic realms; (b) wildlife species and genetic resources (plant, animal and microbial), and: (c) and natural resources. Through its various programmes, the agency supports a wide range of activities promoting in situ and ex situ conservation of plant, animal and microbial genetic resources and

the use of these resources for agriculture, forestry and industry. In collaboration with partner agencies, it supports conservation of biodiversity within the frameworks of Agenda 21 and the CBD.

In the BPIS, special attention will be given to the conservation and sustainable development of special ecosystems that are especially vulnerable. These include Small Island Developing States (SIDS) and lands susceptible to desertification.

The BPIS also focuses much of its actions in promoting conservation and sustainable use of biodiversity in transborder settings. It is here where UNEP's expertise in mediation and consensus building is often most valued. Projects in this area are largely to support the preparation and implementation of strategies and action plans for regional seas, international watersheds and binational as well as multi-national reserves.

3.3.1 Marine biodiversity

The protection of marine living resources is, by decision of the Governing Council of UNEP, one of three components constituting UNEP's OCA/PAC. Recognizing FAO's role and mandate, UNEP has concentrated on species and ecosystems not commercially exploited through fishing. A number of the activities undertaken by OCA/PAC in the framework of this component are directly related to the conservation of marine biodiversity and a contribution to the implementation of the CBD. New areas such coral reef management will become important in the work of UNEP.

UNEP's Regional Seas Programme provides an excellent model for integrating biodiversity management components into regional action plans. This is best demonstrated by the Regional Seas Protocols concerning Specially Protected Areas and Wildlife (SPAW) that have been adopted by the parties to four Regional Seas Conventions covering the following regions: the Mediterranean, Caribbean, South-East Pacific and East Africa. In each region, the Protocol differs and may or may not contain listing of species. In addition, as a consequence of the adoption of the Protocols, specific Action Plans or Programmes have been formulated and institutional frameworks developed in the form of Regional Activity Centres (RACs).

BOX 12. Protecting marine mammals

The protection of marine mammals is emerging as an important area of UNEP's work and interest. This is particularly vital because much of the world's conservation efforts have been directed at terrestrial ecosystems and species. A number of key initiatives have been launched by UNEP in cooperation with other agencies to promote the protection of marine mammals.

Of particular interest are the Global Plan of Action for the Conservation, Management and Utilization of Marine Mammals (MMAP) and the programmes developed to implement the provisions of Protocols Concerning Specially Protected Areas (SPAWs) and Wild Fauna and Flora of several regional seas action plans.

The MMAP was developed between 1978 and 1983 by UNEP and FAO, in collaboration with other inter-governmental and non-governmental bodies concerned with marine mammal issues, which was adopted by UNEP in 1984. As envisaged by the Plan, major international agencies concerned with marine mammals were invited to join in a Planning and Coordinating Committee (PCC), composed of both inter-governmental (UNEP, FAO, IOC/UNESCO and IATTC) and NGOs (IUCN, WWF, Greenpeace and IFAW) through which they co-ordinate their work in this field. UNEP has served as Secretariat of the Action Plan since 1985.

A Regional Activity Centre (RAC/SPAW) was established in Tunis in 1985 to oversee the implementation of the Protocol in the Mediterranean and a similar RAC is in the planning stages for the Caribbean. The long term objective of the Tunis RAC/SPAW is to "help promote the development of a network of Mediterranean marine and coastal protected areas through the implementation of the Protocol concerning Mediterranean Specially Protected Areas . . . and to help promote the protection of endangered species and the conservation of biological diversity in the Mediterranean through the implementation of the Protocol and adopted Action Plans."

The development of these programmes are at different stages in each region and how they are structured and function differ in accordance with the needs of Governments of the region. In the case of the Mediterranean, meetings of National Focal Points are convened every two years to guide and advise the RAC on all issues relevant to the SPAW protocol, whereas in the Caribbean an Interim Scientific and Technical Advisory Committee (ISTAC) has been established in keeping with the provisions of the Protocol. The interim nature of the Committee will cease once the Protocol enters into force. The activities in each programme are wide in nature and are carried out in cooperation with many partners including UN agencies, intergovernmental and non-governmental organizations.

UNEP is particularly concerned about the special vulnerability of the biodiversity of SIDS, that are characterized by a high number of endemic plant and animal species. Through UNEP's Regional Seas Programme, many of the issues of biodiversity conservation for small islands are being addressed, primarily for coastal and marine habitats. Despite the magnitude of the problem, little has been done on the conservation of the terrestrial biodiversity of small island developing states. WCMC prepared a series of over 30 Biodiversity Profiles of Small Island Developing States in a UNEP-funded project at the end of 1993.

With the adoption of the GEF Operational Strategy on International Waters, UNEP will play an important role in the identification, review and implementation of projects on international waters in support of the implementation of Chapter 17 of Agenda 21. Emphasis will be placed on assessment, monitoring and scientific research of marine biodiversity, as well as on the inclusion of biodiversity components in the preparation of integrated management plans for international marine and coastal areas. Such management plans should consider measures to prevent the destruction of marine and coastal habitats, prevent the over-harvesting of biological resources, and incorporate enhanced management of shared marine ecosystems, among others.

BOX 13. Biodiversity and Small Island Developing States (SIDS)

In the overall biodiversity picture, islands are very important since they are home to a disproportionately high number of endemic plant and animal species. For example, of Jamaica's 3,582 described native species, 912 are endemic. Approximately 10% of the earth's 9,000 species of birds have ranges limited to one island. The same isolation that contributes to the evolution of endemic island species also makes them more specialized and, therefore, more vulnerable. Stable populations, which are usually small, can be wiped out in a short period of time by human-induced habitat destruction, the biological invasion of exotic species, or severely affected by natural catastrophes such as hurricanes and tsunamis. Already a number of endemic species of Eastern Caribbean birds are extinct, and most are endangered.

The vulnerability of endemic island species worldwide is today one of the most pressing problems in the field of biodiversity management. The World Resources Institute has reported that approximately 3 out of 4 species that have become extinct in recent history were island dwellers. Oceania has the world's highest proportion of endangered wildlife species. According to a report on the status of the world's plants compiled by WCMC, 70% (1,343) of 1,918 endemic vascular plant species from selected oceanic islands, including Mauritius, the Seychelles, the Galapagos, and the Canary Islands, are rare, threatened, or extinct.

The problems for biodiversity conservation in small island developing states were addressed in April-May 1994 at the United Nations Conference on the Sustainable Development of Small Island Developing States in Barbados. On many islands, native forests have completely disappeared and on most have been reduced to small remnants with uncertain viability. The stabilization of populations of endangered species and the rehabilitation of native ecosystems after centuries of destruction and degradation are especially difficult on small islands. The natural resource base in many instances is unable to renew itself. Tropical islands with their uneven topography, high rainfall and winds are particularly susceptible to severe land erosion, which in turn hinders the re-establishment of biologically diverse plant communities.

Moreover, the remaining reservoir of flora and fauna may be too small and unstable to re-colonize degraded lands with viable individuals. The small scale economies of small island states often lack the human and financial resources, know how and technology, institutional capacity, and corresponding national strategies for effectively preserving, restoring and managing their biodiversity. Though the terrestrial biodiversity is more threatened on small islands, sedimentation, agrochemicals, industrial wastes, sewage water and oil spills, as well as the plundering of coral reefs, have devastated the marine biodiversity of small islands. The economic impacts are great since tourism is often a major sector of the economy.

Proposed actions:

UNEP's support to the MMAP will continue to be a priority of its Marine Living Resources sub-programme.

UNEP will also initiate support to the International Coral Reef Initiative (ICRI), one of the principal outcomes of the United Nations Conference on Small Island Developing States held in Barbados in April-May 1994. Partner countries promoting ICRI include the United States, Japan, Australia and Jamaica. Through the initiative, regional priorities for action and a strategy will be developed and implemented for the protection, restoration, sustainable use and understanding of coral reefs and related ecosystems. It will include components on capacity building, research and monitoring, and information management. The end result is expected to be increased capacity of countries and regions to effectively manage and sustainably use coral reefs and related environments.

UNEP is particularly interested in supporting the implementation of the coral reef initiative in the whole of the Indian Ocean, including the Gulf of Oman and the Red Sea. Attention will also be given to the Pacific Ocean and the Caribbean Sea.

OCA/PAC will be working closely with WCMC which will provide information support and technical backup to the following programme areas: Antarctica, SIDS, coastal ecosystem monitoring (reefs, mangroves, seagrass beds, and others) and marine mammals (e.g., small cetaceans).

UNEP will continue urging the Contracting Parties of the Cartagena Convention to ratify the SPAW Protocol for the Caribbean.

Activities that might directly or indirectly be linked to biodiversity conservation are being developed or planned in the other Regional Seas that do not necessarily have a SPAW Protocol.

UNEP will elaborate a Biodiversity Strategy for Small Island Developing States which will take into account the unique problems which they face in biodiversity management, including the potential threats posed by sea level rise. Such a project would also be in line with the CBD which takes note of the special conditions of small island states. In developing

the Strategy, special attention will be given to the recommendations of the United Nations Conference on the Sustainable Development of Small Island Developing States. The ICRI will also be closely linked to the Strategy.

The SIDS Strategy will address the pressing need for additional research on biodiversity conservation on small islands Of all the biological approaches to conservation, the continuing study of natural area isolates is the most pressing need. This area of work be considerably developed before long-term conservation strategies and programmes can be well defined. In addition, the capability of existing protected areas to provide protection for species and ecosystems requires much more attention.

A great deal of research is urgently needed on optimal size of biodiversity reserves; special emphasis will be placed on studying habitat size and species loss, as well as minimum viable population requirements. Basic information is also needed on the ecology of rare and endangered species in predicting the effects of future land-use change. From the management side, this research has to be accompanied by studies of the social and economic needs of people living in adjacent areas, with a view to harmonizing their aspirations with the goals of conserving biodiversity. The Strategy will also include support in systematizing the existing biodiversity legislation of small island developing states.

3.3.2 Freshwater biodiversity

Because of the rapid and alarming degradation of freshwater ecosystems due to deteriorating water quality, extraction and re-channeling, freshwater species are among the world's most endangered. As in the case of islands, freshwater ecosystems are characterized by a high degree of endemism. The deterioration of aquatic systems often means loss of species unable to migrate to suitable habitats.

Much of the focus of UNEP's work in freshwater is on the development of integrated management plans for international watersheds. In the past, UNEP supported the preparation of the Zambezi River Basin Action Plan and the Master Plan for the Lake Chad Conventional Basin, as well as the Diagnostic Study of the Aral Sea.

With the adoption of the GEF Operational Strategy on International Waters, UNEP will play a key role in the identification, review and implementation of projects on international waters in support of the implementation of Chapter 18 of Agenda 21. In addition to assessment, monitoring and scientific research of freshwater biodiversity, emphasis will be placed on the inclusion of biodiversity in the preparation of integrated management plans for international basins. These management plans will take into account measures to prevent the destruction of freshwater habitats, avert the introduction of

undesirable or exotic freshwater species, prevent the over-harvesting of biological resources, and promote the enhanced management of transboundary ecosystems, among others.

Priority will be given to the successful implementation of the GEF Operational Strategy on Biodiversity as well as the biodiversity programme priorities and measures of the GEF Operational Strategy on International Waters.

Proposed actions:

There is an urgent need to carry out a global assessment of the status of freshwater species as a basis for defining necessary actions for their protection. A first preliminary attempt was undertaken in 1992 with the preparation of *Global Biodiversity: Status of the Earth's Living Resources*. UNEP will explore with other partners the feasibility of carrying out such an assessment.

UNEP will also explore with its partners, including IUCN's Species Survival Commission (SSC), the feasibility of implementing a Global Plan of Action for the Conservation, Management and Sustainability of Freshwater and Amphibious Mammals, including river dolphins, manatees, otters and beavers.

UNEP will also give greater attention to the management of wetlands as important natural resources for regulating the water regimes of rivers and lakes and as important habitats for a wide array of flora and fauna. Wetlands are one of the world's most threatened ecosystems, but little information about them exists. In response to the need by Governments in Africa, Asia-Pacific, Latin America and the Caribbean and West Asia, UNEP will provide scientific, technical and financial support to the development and implementation of effective conservation policies, laws and programmes to conserve and sustainably use their wetland resources. As a first step, with the collaboration of the Asian Wetland Bureau (AWB) and the University of Malaya in Kuala Lumpur, Malaysia, UNEP will initiate a project on the development of guidelines for the environmentally-sound management of watersheds in Asia for the maintenance of wetland benefits. The project will be carried out in consultation with the Secretariat of the Ramsar Convention.

In addition, with AWB and WCMC, a first phase project will be initiated to prepare a methodology for national wetlands inventories that can be applied in all countries and to design a supporting wetlands database in GIS format. Likewise, this project will be implemented in consultation with the Secretariat of the Ramsar Convention.

Future action plans for international watersheds will be modeled along the lines of the Regional Seas Programme.

Through the Wetlands of the Americas (WA), UNEP will initiate the Wetlands of South America: An Agenda for Biological Diversity Conservation and Policy Development project. Additional financial support is being provided by Wildlife Habitat Canada, United States Agency for International Development (USAID), the Tinker Foundation and the Manomet Bird Observatory. The project will produce the first comprehensive biological assessment and legal and policy review directed at setting a conservation agenda for South American wetlands.

A principal output of the project will be a publication synthesizing current knowledge on wetland biodiversity, productivity and conservation problems in the region, and the current legislation as well as policies of national governments and international agencies that affect wetlands. The publication will be distributed to Governments, UN agencies, other IGOs, NGOs, international convention secretariats, conservation and development organizations, funding agencies, and other institutions and scientists that may influence or directly act on wetland conservation issues in South America.

Future action plans for international watersheds will be modeled along the lines of the Regional Seas Programme, and will include major components on biodiversity management. UNEP is in the process of launching the preparation of integrated management plans for the San Juan River basin (Costa Rica-Nicaragua) and the Lake Titicaca basin (Bolivia-Peru), both of which are rich in biodiversity and especially endemic species. Both projects are expected to serve as models for the development of future action plans for international watersheds throughout the world. Unlike in earlier action plans, top priority will be given to the integrated

management of each watershed's biodiversity, both aquatic and terrestrial.

UNEP and the Department of Regional Development and the Environment of the Organization of American States (OAS) will assist the governments in the preparation of the Integrated Environmental Management Programme of the Global Binational Master Plan for the Lake Titicaca, Desaguadero River, Lake Poopó and Coípasa Salt Lake closed basin system. The programme contemplates the preparation of a GIS on ecosystems and protected areas and the elaboration of pre-feasibility level studies and proposals for priority sustainable development projects which aim at improving the quality of life of the inhabitants of the basin, as well as conserving the region's biodiversity, cultural heritage and characteristic landscapes.

Among these sustainable development projects are: (a) the restoration of the totora (*Schoenoeplectus tatora*), a multi-purpose endemic aquatic reed, in Lake Titicaca; (b) the development of the 640,000 hectares Lake Titicaca Binational Reserve, an area rich in wetlands and wildlife endemic to the high Andes (over 3,800 meters above sea level); (c) the development of fishing in Lake Titicaca, emphasizing the sustainable utilization of native species and the reduction of exotics to aquacultural enclosures; (d) the management of mini-watersheds, with special emphasis on reforestation, soil erosion control and sustainable agricultural development with native species, and (e) the development of a sub-programme in ecotourism, including archeological and cultural heritage sites as well as protected areas and special landscapes.

The Integrated Management Plan for the Sustainable Development of the San Juan River Basin will include specifically a sustainable management strategy for the watershed's biodiversity, much of which is found in aquatic ecosystems and wetlands. It will take into account the binational System of Protected Areas for Peace (SI-A-PAZ) created in 1990 along the river-lake axis of Lake Nicaragua and the San Juan River. Endemic species include the world's only species of freshwater shark. Pre-feasibility level project proposals will be drafted on ecotourism and the management of three key protected areas within SI-A-PAZ, including the 295,000 hectares Great Indian Corn Biological Reserve in Nicaragua. UNEP in partnership with the OAS will be supporting this project.

Priority will be given to the successful implementation of the GEF Operational Strategy on Biodiversity as well as the biodiversity programme priorities and measures of the GEF Operational Strategy on International Waters.

3.3.3 Terrestrial biodiversity

UNEP's activities in this area are largely directed at strengthening national capacities in the management of terrestrial wildlife and protected areas. To this end, it has worked closely with IUCN's Commission on National Parks and Protected Areas (CNPPA). Several activities have been carried out in Africa, Eastern Europe and Asia in support of the Action Plan for Biosphere Reserves in association with UNESCO and UNEPCOM. At the species level, it has played a lead role in promoting the protection of African and Asian elephants and rhinoceros, as well as the tiger. Additional details are provided.

UNEP is particularly interested in supporting the management and sustainable development of binational and multi-national reserves. Border areas are frequently politically and economically marginalized, have low population densities and high incidence of poverty, but are rich in natural resources and forest cover. These factors have in the past been conducive to breeding armed insurgency. In cases such as Central America, which lived through a very difficult period in the 1980s, sustainable development border integration projects are now at the top of the agenda of the sub-region's peace and integration process. At the same time that conservation has become an effective tool for peace, the Central American Presidents have agreed that sustainable development projects along their borders are urgently needed to address the problems of poverty and marginalization.

UNEP has recently paid much attention to supporting the preparation of sustainable development plans for border areas. In 1993 UNEP supported the preparation and publication of a provocative book entitled *Transfrontier Reserves for Peace and Nature: A Contribution to Human Security*. The book

underlines the need for maintaining peaceful and harmonious political conditions in order to be able to achieve sustainable development. Specifically, it aimed at broadening the conservation agenda for Indochina by presenting case studies for the establishment of a tri-national park.) In many cases, these projects could be best developed within the conceptual framework of international biosphere reserves containing binational or tri-national border protected areas.

In 1992, UNEP joined the OAS Department of Regional Development as an implementing agency to support the development of a Management Strategy of the 11,226 km² La Amistad International Biosphere Reserve (Costa Rica-Panama). At the heart is the La Amistad International Park (1,939 km² in Costa Rica and 2,070 km² in Panama), with an additional 5,766 km² of protected and limited use areas inside the Reserve, including Native American reserves. UNEP is supporting the development of project proposals on agroforestry, forestry, sustainable biodiversity utilization and ecotourism for presentation to donors. La Amistad, which is Spanish for friendship, was designated a priority border integration project at the XIII Summit of Central American Presidents in 1992.

UNEP is currently consulting with Governments, the OAS, the Central American Commission on Environment and Development (CCAD), and NGOs on the implementation of a project for establishing the Path of the Panther system of protected areas. This ambitious project proposes to connect protected areas the length of the Central American Isthmus by means of ecological corridors that permit the movement of wildlife along this important biological land bridge, thus helping conserve the sub-region's immense biodiversity by allowing a freer intermixing of genetic pools from different areas.

Extending the length of the land bridge connecting North America and South America, a distance of approximately 1,800 kilometers, from the Mexican-Guatemalan border to the Panamanian-Colombian border and involving nine countries, the Path of the Panther would probably be the largest multi-national system of protected areas on earth. To contribute to the economic recuperation of Central America, the project contemplates sustainable development activities such as ecotourism and agroforestry.

The importance of drylands biodiversity was recognized in Agenda 21, the CBD, as well as the Convention to Combat Desertification.

UNEP is also keenly interested in the loss of biodiversity in drylands due to the destruction of habitats and the over-use of native vegetation. In drylands, those same habitats represent the resource base for productive agriculture, but because their productivity is low, soils, flora and fauna are increasingly degraded. Although the number of species is lower in arid lands, many of the world's most important crops, such as wheat, barley, sorghum, millet and cotton, originated there, as well as important domestic livestock like horses, sheep, goats, cattle and camels. The importance of drylands biodiversity was recognized in Agenda 21, the CBD, as well as the Convention to Combat Desertification.

Proposed actions:

UNEP will assist Governments in a number of ways: (a) it will support efforts to formulate and implement policy frameworks, strategies and action plans for the selection, establishment, management and administration of national systems of protected areas for in situ conservation of biodiversity in the countries of the various regions; (b) UNEP will incorporate these policy frameworks, strategies and action plans into national development plans and promoting their implementation; (c) UNEP will train specialists in the conservation of biodiversity in wildlands and protected areas and (d) UNEP will make accessible throughout the regions the knowledge, technical experience and information generated in the different countries on matters regarding conservation of biodiversity in wildlands and protected areas.

UNEP will also continue to assign top priority to activities such as the project "Wildlands, Protected Areas and Wildlife Management in Latin America and the Caribbean" and similar projects in Africa, Asia-Pacific and West Asia.

As in the case of the African Regional Meeting of CNPPA in Kruger National Park, South Africa, UNEP is prepared to support CNPPA in other such meetings for the establishment and management of

BOX 14. UNEP's work in terrestrial biodiversity: A sample

Since 1985, in cooperation with FAO as the implementing agency, it has supported the project "Wildlands, Protected Areas and Wildlife Management in Latin America and the Caribbean", designated a priority regional activity by the Regional Ministerial Meetings on the Environment. Though the focus is primarily on terrestrial protected areas, coastal and marine protected areas are also considered. The project responds directly to training needs and requirements in the region and promotes the exchange of technical information and expertise among countries in the following areas: development of conservation strategies, planning of national parks, management of border parks and management of wildlife. Under the project, manuals and guidelines for the management of wildlands, protected areas and wildlife have been prepared. Information on the activities of this extensive project are disseminated through a widely distributed information exchange bulletin.

UNEP also co-sponsored and provided support to the IV Africa Regional Working Session of the IUCN Commission on National Parks and Protected Areas held in Kruger National Park, South Africa in October 1994, in which the directors of parks services from the Afrotropical region endorsed an outline for an action plan for the establishment and management of a comprehensive system of protected areas, primarily terrestrial but also including coastal and marine, for the Afrotropical region. One of the Action Plan activities is to update the database of protected areas in the WCMC Protected Areas Data Unit.

UNEP/TEB has also supported research projects for enhancing knowledge of ecosystems dynamics, structure and functions. TEB was the principal collaborator within UNEP's Environment Programme in the design and follow-up of the Biodiversity and Microclimate of the Tropical Forest Canopy project . It was also responsible for the design of the project on the scientific management of ecotones in a changing environment with the Scientific Committee on the Problems of the Environment (SCOPE) of the International Council of Scientific Unions (ICSU). It is supporting policy-making for sustainable rangeland management in East Africa through the preparation of the Master Plan for the Mpala Research Centre.

At the species level, in 1993 UNEP played a lead role in supporting the preparation or updating of 33 Country Action Plans for African Elephant Conservation and 18 Country Action Plans for African and Asian Rhinoceros Conservation. This included organizing the UNEP Conference Between the Rhinoceros Range States, Consumer States and Donors on Financing the Conservation of the Rhinoceros held in Nairobi from 28 June to 1 July 1994. As a follow-up, UNEP facilitated the design of a US$2 million project on a conservation strategy for rhinoceros in Southeast Asia (Malaysia and Indonesia) endorsed by the GEF Participant Assembly. UNEP also funds the Coordinating Secretariat for the negotiation of the Lusaka Agreement on Cooperative Enforcement Operations Directed at International Illegal Trade in Wild Fauna and Flora, including elephant tusks and rhinoceros horns.

UNEP co-sponsored the First Meeting of Tiger Range States for the Conservation of the Tiger in New Delhi, India in March 1994 and supported the 14 tiger range States in preparing Tiger Conservation Country Action Plans. The meeting launched the Global Tiger Forum to facilitate collaboration among tiger range States, consumer States and donors in identifying and negotiating measures for improving the conservation of the tiger and its habitats.

comprehensive regional systems of protected areas.

UNEP will provide technical assistance and support to the development and implementation of conservation policies and programmes to conserve and sustainably use wildlife resources in Sub-Saharan Africa, with special emphasis on the role of wildlife resources in local and national economies.

UNEP has established an Elephant and Rhinoceros Conservation Facility which includes the African and Asian species of elephants and rhinoceros. The main function of the Facility, which became operational in April 1994, is to provide technical coordination, secure financial resources and ensure governmental commitment for the preparation and implementation of elephant and rhinoceros conservation strategies and action plans, as well as providing technical advise to range States.

In addition to maintaining a database of programmes, projects, costs and resources, it will prepare a directory of institutions active in scientific research, assessment and conservation of elephants and rhinoceros, as well as an updated directory of funding sources for elephant and rhinoceros

conservation. The Facility will coordinate its activities with relevant UN agencies and intergovernmental bodies, including the CITES Secretariat and GEF, as well as NGOs. In addition to continuing to support the development of the Facility, UNEP is in the process of preparing comprehensive global strategy documents for presentation to the 18th Period of Sessions of UNEP's Governing Council.

As a follow-up to the establishment of the Global Tiger Forum, UNEP will contribute to the elaboration of a Global Tiger Conservation Strategy and a Global Tiger Action Plan, including the consideration of funding aspects.

UNEP in collaboration with partner agencies will give greater attention to providing technical and policy advise and support to Governments interested in the feasibility of establishing border parks and biosphere reserves. This is a dimension of UNEP's activities in conservation that will be further developed. In collaboration with IUCN and WCMC, a workshop and guidebook on such areas will be organized to enable countries to share their experiences in the management of binational and multi-national reserves.

Continued support will be given to the preparation and adoption of the Management Strategy of the La Amistad Biosphere Reserve. In particular, UNEP will provide support for: (a) reinforcing the legal basis of the Strategy; (b) examining institutional alternatives for the binational coordination of the Reserve; (c) evaluating options for financial mechanisms; (d) adding a coastal management plan as a component of the Biosphere Reserve, including the preparation of a coastal zoning management scheme; (e) harmonizing national laws relevant to the management of the Reserve; and (f) preparing pre-feasibility studies for priority sustainable development investment projects: ecotourism, sustainable agriculture, sustainable fisheries, energy, sustainable utilization of biodiversity (iguana and conejo pintado), environmental quality monitoring. La Amistad is viewed as a pilot project which can serve as a model for similar initiatives in other areas.

Further consultations will be held with Governments and partner organizations on the Path of the Panther initiative. Preliminary consultations have been positive. It is likely that a favourable decision will be required first by the CCAD, comprised of the Ministers in charge of the environment. If agreement is reached, UNEP will be prepared to support the development of this important project.

Pilot projects for the in situ and on-farm conservation of biodiversity in drylands will be developed with the participation of land users, taking into account appropriate measures for the integrated management of soils, water and vegetation for the rehabilitation of degraded lands. Special emphasis will be given to the utilization of native species in land restoration and sustainable agricultural development. In addition to promoting land rehabilitation, resource management strategies for drylands will also focus on improving the economic livelihoods of the local community through the sustainable use of biodiversity.

To contribute to the development of appropriate land management strategies for drylands, UNEP will support the preparation of an inventory of indigenous knowledge about: (a) cultivated species and their wild relatives in arid and semi-arid lands, (b) the functions of native species in con-trolling land degradation and (c) traditional agricultural practices.

3.3.4 Microbiological and genetic resources

Equally important to UNEP has been the *ex situ* protection of genetic resources as a basic element to ensure the availability of genetic resources for sustainable development in agriculture and forestry. Article 9 of the CBD stresses the importance of *ex situ* conservation facilities as the key to ensuring the availability of genetic resources for research and use.

The collaborative work in this field among UNEP, International Plant Genetic Resources Institute (IPGRI), UNESCO and FAO, among others, will be essential in supporting the implementation of the provisions of Article 9, and for providing an invaluable resource base for the development of more productive sustainable systems in agriculture and forestry.

Microbiological resources

UNEP support to the conservation for sustainable utilization of microbiological resources is carried out principally through the MIRCENs network. Culture collections housed in MIRCENs are used for promoting the environmentally sound application of related biotechnologies in developing countries. Some of the biotechnologies may also be relevant for industrialized countries in fields such as pollution control.

Proposed actions:

As indicated, UNEP will continue to support the MIRCENs network and will cooperate with other agencies such as UNESCO and WCC.

Plant genetic resources

UNEP supports the international programme for conservation of crop and tree genetic resources that is coordinated by IPGRI. Joint activities between the two organizations have supported the establishment and development of a global network of gene banks in more than 30 countries, under the coordination of IPGRI. The network contains 40 base collections. By 1994, more than 100 countries were collaborating with the programme and over 500,000 plant samples had been collected, evaluated and deposited in the base collections. The germplasm, and information about it, is accessible to all United Nations members for use in sustainable agricultural development. Complementary training activities are provided through the programme.

In collaboration with FAO, UNEP has supported the global and regional programmes and action plans for training and developing human resources on the conservation and sustainable utilization of plant genetic resources that are implemented by IPGRI. Topics addressed include basic seed gene bank procedures, safeguarding the genetic basis of Africa's traditional crops, and strategies for the development of national plant genetic resources programmes, among others.

The FAO Commission on Plant Genetic Resources in April 1994 invited UNEP to play a more active role in the preparatory process of the Fourth International Technical Conference on the Conservation and Utilization of Plant Genetic Resources. It also

called for closer coordination with UNEP on the preparation of country biodiversity studies and the FAO state of the world Plant Genetic Resources Report.

Proposed actions:

UNEP will continue to support the international programme for the conservation of crop and tree genetic resources coordinated by IPGRI, particularly training and human resources development activities.

UNEP favours and is looking forward to closer cooperation with the FAO Commission on Plant Genetic Resources in the biodiversity country studies.

It is also prepared to provide technical, scientific and financial support, as appropriate, to the organization of the Fourth International Technical Conference on the Conservation and Utilization of Plant Genetic Resources scheduled for 1996.

Animal genetic resources

FAO and UNEP are working together on the establishment of a comprehensive animal genetic resources programme. They have co-sponsored pilot projects for the conservation of endangered livestock genetic resources, concentrating most of their activities on the needs and prospects of developing countries. The two have jointly developed animal descriptor surveys, conservation methodologies, pilot gene banks and training programmes.

In 1993, the preparation of a world watch list and survey of critical issues was initiated and data banks for Africa, Asia and Latin America were set up. As a consequence, in November of that year the World Watch List of Domestic Animal Diversity was released which was subsequently followed by a monograph on the wild relatives of domestic animal genetic resources. In 1994, FAO in collaboration with UNEP prepared a global programme for the Conservation of Domestic Animal Diversity. Information on cooperative activities is published in the FAO/UNEP Animal Genetic Resources Information Bulletin.

Proposed actions:

The important collaborative efforts of FAO and UNEP in this field will continue to be supported. The 5th WCGALP/FAO Symposium on the Conservation of Domestic Animal Diversity in Canada in August 1994 provided valuable recommendations which UNEP will consider for implementation. The focus will be on the conservation of domestic animal genetic resources through national and international actions.

In 1994, FAO in collaboration with UNEP prepared a global programme for the Conservation of Domestic Animal Diversity.

These include: (a) the global programme for the Conservation of Domestic Animal Diversity; (b) increased collaboration with international and national NGOs, including farmers' organizations and breeding companies; (c) the mobilization of scientific, financial, institutional and human resources for analyzing and promoting the conservation of DAD; (d) the integration of DAD conservation issues into the curricula of universities and other educational and training institutions; (e) the preparation of a comprehensive inventory of genetic resources within each species; (f) the development of national on-going monitoring strategies; (g) analysis of the potential impacts of exotic genetic material on local genetic resources; and (h) promotion of sound animal breeding strategies for specific livestock management systems.

UNEP will examine the feasibility of establishing a network similar to the MIRCENs for the conservation of the wild relatives of domestic animals.

Given the growing importance of game ranching, particularly in Africa, UNEP will support work on the development of game animal descriptor surveys, conservation methodologies, pilot gene banks and training programmes. As in the case of domestic animals, consideration will be given to the preparation of a world watch list of game ranch animals.

3.4 Biodiversity and economics

According to Chapter 38 of Agenda 21, UNEP will concentrate on the developing and promoting the use of environmental economics and natural resource accounting as a priority area of action. This is particularly important because of the growing concern that some of the traditional tools used in economic analysis may no be adequate in dealing with environmental issues. There is considerable scope for UNEP to support

activities aimed at improving existing analytical methods and developing new ones. Such UNEP efforts would complement the initiatives launched by the GEF Secretariat in improving the effectiveness of incremental cost analysis as a decision-making tool.

3.4.1 International trade and biodiversity

In Agenda 21, Chapter 2, Governments called upon international trade and environmental policies to become "mutually supportive". in recent years, the issue of the compatibility between trade liberalization and environmental protection has become a major concern in both the trade and environmental arenas.

A large number of complex legal, scientific and economic issues are under scrutiny in the current trade-environment debate. These fall in two key areas: the effects of environmental protection and conservation policies on trade liberalization and market access issues, and the effect of trade liberalization on environment and conservation. Following the completion of the Uruguay Round of negotiations, these issues are being discussed in carious international fora, including the WTO, UNCTAD, OECD and UNEP.

UNEP's interest in the trade environment discussion is to help ensure that an adequate and informed environmental perspective is struck. Indeed, the WTO work plan on trade-environment covers the relationship between international environmental agreements and trade policy.

Given the complexity of these issues, in March 1994 UNEP released a background report, under its Environment and Trade Series, entitled *Institutional Mechanisms Supporting Trade in Genetic Materials: Issues under the Biodiversity Convention and GATT/ TRIPS*. To begin examination of potential financing opportunities for environment (including biodiversity), UNEP hosted in September 1994 a two day meeting on environmental management and the financial services sector.

BOX 15. Biodiversity and international trade: emerging issues

An issue of growing importance is the relationship between the international trade rules of the World Trade Organisation (WTO) and the CBD. During the negotiations for the CBD matters pertaining to international trade were not extensively discussed because they were being reviewed under the Uruguay Round of negotiations. Following the conclusion of the negotiations for the CBD and the formation of the WTO, interest is emerging over the relationships between biodiversity conservation and international trade. This is particularly so because the CBD is largely a pact between countries in which genetic resources and technology would be exchanged. A key medium through which such exchanges would take place is the international market. In this regard, rules governing international trade will have direct relevance for the CBD. In addition, some of the conservation objectives of the CBD may also have implications for international trade.

At the June 1995 meeting of the WTO Committee on Trade and Environment, for example, governments supported the need for greater analysis of the relationship between trade liberalization and the objectives of the CBD. More work is needed to assess the economic and legal implications of the provisions of the CBD regarding access to genetic resources (Article 15) and transfer of technology (Article 16) on the one hand, and the trade-related intellectual property (TRIPs) provisions of international trade rules. Work is needed, for example, to assess the applicability of Article 27 of TRIPs regarding exceptions, and its relations to Article XX of GATT 1994. Work is also needed in understanding the implications of extending intellectual property rights to genetically-modified organisms (GMOs) as well as the long-term implications of patents on small-scale farmers, local communities, and traditional knowledge.

Although the major focus of current deliberations is on agreements which use explicit trade measures to help achieve environmental goals (such as quotas, bans, export notification and consent procedures), an issue of growing importance is the relationship between the Uruguay Round and the CBD. Areas of concern include: trade implications related to the Convention's recognition of access issues, including developing country access to environmentally-sound technologies related to biodiversity protection and access of developed countries to biological, genetic and other resources.

Associated issues include the relationship between the Uruguay Round Trade-Related Intellectual Property Agreement and the Convention's indirect recognition of the need for a more flexible intellectual property rights and patent protection regime, particularly as it relates to modified living organisms, biotechnology and other areas.

Proposed actions:

UNEP's future work in trade and biodiversity will focus on four key areas identified in Agenda 21: (a) the preparation of a background report on the implications of access issues in relation to existing patent, royalty and intellectual property rights issues; (b) economic analysis of patenting of GMOs, with specific reference to developing countries; (c) the trade implications of market-based incentives and instruments intended to promote biodiversity conservation; (d) analysis of the valuation of biodiversity and the implications of amended valuation on terms of trade for developing countries, with particular reference to commodity intensive exports; and (e) the organization of a major conference on "Environmental Review of Trade Policies", in accordance with 15.5 (k) of Agenda 21, in which the effects of trade on biodiversity and national conservation strategies will be addressed.

In light of the formation of the Intergovernmental Panel on Forests (IPF), UNEP will support activities aimed at clarifying the relationships between international trade in forest products and the provisions of forest-related international environmental agreements. Policy studies on the environmental implications of trade agreements relating to forest products will be an important areas of analysis for UNEP.

3.4.2 Use of economic policy instruments for biodiversity management

Proposed actions:

The valuation of biodiversity continues to be a problematic area requiring further work. In the end, it may be discovered that species and ecosystems cannot be reduced to price tags. However, while economic valuation techniques are being developed, several economic tools have applicability to biodiversity management. Standard economic tools such as cost effectiveness analysis can assist decision makers in choosing the appropriate level of biodiversity protection, despite the current inadequacy of valuation methods. Moreover, it can also indicate the most effective policies and projects for achieving biodiversity protection, as well as indicate appropriate economic tools for attaining policy and project objectives.

Greater attention will be given by UNEP to the development and application of economic tools for determining the costs and benefits of biodiversity conservation and sustainable utilization. To this end, UNEP proposes to carry out country pilot studies to enable countries to: (a) apply more effective economic approaches to biodiversity valuation (goods and services), including the development of natural resource accounts for biodiversity; (b) calculate the cost effectiveness of biodiversity conservation policy and project options; and (c) apply economic policy instruments such as economic incentives, tradable quotas and taxes, which are normally applied in combination with regulations.

UNEP provided support to the "Workshop on Financing Biodiversity: How to Pay for the Conservation of Biodiversity and the Sustainable Use of Biological Resources". The workshop was organized by IUCN and the Centre for Social and Economic Research on the Global Environment (CSERGE), and held in July 1995. It examined possible funding mechanisms such as charges (conservation taxes, user fees, liability rules, among others), tradeable permits for development, creation of markets (e.g., for use of genetic resources and ecotourism), environmental performance bonds, trade policy instruments, subsidies for provision of positive environmental externalities in agriculture, and purchase of development rights for landscape protection. Three principal outputs are expected: (a) a book on alternative funding mechanisms; (b) a shorter, more popular document on funding mechanisms; and (c) fact sheets on each of the financial mechanisms.

UNEP will also design activities

aimed at promoting the use "trust funds" as well as forging partnerships with private sector institutions in biodiversity conservation. The use of innovative approaches such as trust funds would help to enhance the role of local communities and particularly women in biodiversity conservation. In addition, such trust funds could be designed in such as way that external support is used to leverage local contributions and thereby stimulate the formation of self-sustaining activities.

3.4.3 Assessing the impact of development on biodiversity

Much greater efforts are required in assessing the positive and negative impacts of development and macro-economic issues such as population, production and consumption patterns, land tenure systems, world trade, multilateral financing and indebtedness on biodiversity. More specifically, 38.22(h) of Agenda 21 calls for UNEP to further the "development and promotion of the widest possible use of environmental impact assessments".

Proposed actions:

UNEP will support activities aimed at formulating an economically and ecologically-sound basis for advising Governments and development agencies on biodiversity conservation projects. Some of the issues to be covered include population, domestic policy distortions, appropriation failures, structural adjustment and international economic policy, international indebtedness, over-consumption and trade.

An area of particular interest in the impact of economic policy reforms and liberalizatiion on biodiversity conservation. Some of the economic policy reforms are associated with changes in land tenure regimes which affect biodiversity conservation in certain ways. These and other issues related to the impact of poverty on biodiversity conservation will also be addressed.

UNEP will support the preparation of a methodology and guidelines for assessing the impact of development on biodiversity. The methodology and guidelines will be applied and revised as required through country level pilot projects implemented in different ecosystem settings.

3.4.4 Sustainable use of biodiversity

Components for the sustainable use of biodiversity have been integrated into several projects supporting the preparation and implementation of integrated management action plans. These include the Lake Titicaca and San Juan River projects. The Pilot Project for the Integrated Management of Andean Ecosystems in Cajamarca, Peru is UNEP's showcase project on the sustainable use of biodiversity in the field. With the active participation of 650 families, native biodiversity resources were effectively utilized for diversifying agriculture, rehabilitating degraded lands, promoting massive reforestation and producing medicines for the local community.

Proposed actions:

UNEP will promote and support the implementation of pilot projects for

integrated ecosystem management, based on sustainable utilization of native biodiversity, in selected representative ecosystems (e.g., drylands, small islands, tropical forests, mountains).

The Cajamarca Pilot Project will be transformed into the Model Programme on the Integrated Management of Andean Ecosystems. The experiences and lessons learned from the pilot project phase on sustainable use of native species will be extended to other Peruvian areas and Andean countries.

3.5 Biotechnology development

Biotechnology is one of the fastest growing industries today. It is a complex subject that is central to the CBD and features prominently in Agenda 21 (Chapter 16). UNEP will promote actions to facilitate a better understanding of biodiversity issues, including assessments and information exchange. This is a one area where major efforts in capacity building are required.

Biotechnology is one of the fastest growing industries today.

Rapid advances in the field of biotechnology have resulted in the artificial modification of thousands of organisms. This is a field in which UNEP is particularly interested. It has focussed much of its attention on promoting understanding of the implications associated with the release of genetically engineered organisms into the environment. To this end, it has supported activities on information needs concerning genetically modified organisms at the international level. It has also stepped up its support to training in biosafety.

3.5.1 Building biotechnology capability

Proposed actions:

Despite the importance assigned to this issue in Agenda 21, few activities promoting technology transfer have been implemented within the UN system since UNCED. This is one area in which UNEP will take the lead. Technology transfer can be promoted through training, research, information exchange and access to patent information. In collaboration with organizations such as the International Centre for Genetic Engineering and Biotechnology (ICGEB), UNEP will support the development, transfer and dissemination of technologies that are appropriate to improve the conservation of biodiversity and its sustainable utilization.

UNEP will support training activities for building capabilities to acquire, assimilate and utilize technology for environmental management and sustainable development. It is the building of technological capabilities that will enable the countries to make the transition to sustainable development and effectively deal with the barriers. For new technologies to be absorbed effectively, human skills for handling them must be developed.

In collaboration with centres of excellence such as the African Centre for Technology Studies (ACTS) and the International Academy of the Environment (IAE), UNEP will assist countries in the formulation of a policy and institutional measures for accumulating technological capabilities and applying them to sustainable development.

In conjunction with institutions such as IAE and ACTS, UNEP will be initiating a project for facilitating expertise to developing countries requesting advise on complex issues such as intellectual property, contracts with pharmaceutical companies, biodiversity prospecting, and technology transfer, among others. Specialists from developing countries will be trained to participate in providing these facilitating services in their respective regions.

An immediate action that UNEP will take, which will contribute to the implementation of Articles 16 and 17 of the CBD, will be the preparation of an inventory of transferable biotechnologies and know-how that are relevant to the conservation and sustainability of biodiversity or that make use of genetic resources that do not damage the environment.

A large proportion of biotechnologies, whose access is being discussed, are already in place in developing countries. UNEP proposes to support the preparation of regional inventories of existing biotechnologies in developing countries. These inventories can become the basis for promoting South to South cooperation for the exchange of information, training and access to biotechnologies.

UNEP will also support the preparation of inventories of indigenous knowledge. Such inventories have become necessary because of the growing recognition that indigenous communities are custodians of important information on biodiversity conservation. The inventories will be prepared in a way that does not undermine the rights of indigenous peoples and local communities.

Much greater attention also has to be given to profiling country needs and capability in the field of biotechnology. Such profiles will help countries determine investment costs for technology transfer and biotechnology development as a component of national development strategies. They will take into account issues such as socio-economic impacts and indigenous contributions. These activities will be carried out within the context of the biodiversity country studies, strategies and action plans described above.

The development of biotechnology capabilities in a developing country may require substantial investments. UNEP can play an important role in promoting the formulation of national biotechnology investment projects for the consideration of GEF. UNEP will cooperate with institutions such as ACTS which are carrying out such biotechnology country studies in linking the research to UNEP's biodiversity country studies.

UNEP will continue to support and promote forums and workshops for discussing critical policy issues in the field of biodiversity and biotechnology, such as the international workshop on "Property rights, Genetic Resources and Biotechnology" organized by UNEP in collaboration with WRI and ACTS in July 1991 and the "International Conference on the Convention on Biological Diversity: Global Imperatives and National Interests" organized by ACTS and UNEP in 1993.

UNEP will also continue its support to the Information Resource on the Release of Organisms into the Environment (IRRO). This is a global referral service on information regarding genetically modified organisms and where it can be accessed. UNEP is backing the expansion of IRRO and the training activities which it carries out.

3.5.2 Microbial resources and related biotechnologies

UNEP supports the network of nine Microbiological Resources Centres (MIRCENs) which offer research and training activities on fields such as biological pest and vector control. The network is also supported by the World Data Centre on Microorganisms (WDCM) in Japan, a global register of information on microorganisms that can be freely accessed, and the international Microbial Strain Data Network (MSDN) in Cambridge. WDCM is part of the World Federation for Culture Collections (WFCC).

MSDN is a computerized referral system containing information on strains of micro-organisms and cell lines, which is hosted by the Tropical Database (BDT) in Brazil. The network promotes the environmentally sound application of biotechnologies in developing countries, using MIRCEN's culture collections, in such areas as microbial insecticides, biological nitrogen fixation technologies, and the application of microbial technologies for the removal of pollutants from industrial waste waters.

UNEP is also co-sponsoring training activities in microbiology and related biotechnologies. This will be carried out in conjunction with other institutions such as UNESCO and WFCC.

Proposed actions:

UNEP will continue to support the MIRCENs by expanding the network and re-orienting existing MIRCENs to execute pilot projects for the conservation and sustainable use of microbiological resources. UNEP will also continue to support training activities in microbiology and related technologies.

3.5.3 Information and training in biotechnology safety

The agency participates in the UNIDO/UNEP/WHO/FAO Working Group on Biotechnology Safety which is addressing issues such as the promotion of an international code of conduct, the provision of advisory services to Governments in the assessment of releases of genetically engineered and exotic organisms into the environment, the elaboration of a biosafety manual, biosafety training, and the establishment of an

international database on the release of genetically engineered organisms.

With UNIDO's ICGEB, and as a follow-up to the recommendations of the UNIDO/UNEP/WHO/FAO Working Group, it launched a joint programme on biotechnology safety training in 1991. Under this programme, a Biosafety Network and Advisory Service (BINAS) was established in 1993 to help meet the increasing need to standardize regulatory procedures for the release of genetically modified organisms into the environment.

BINAS operates a database which includes information on biotechnology regulations, field releases of GMOs, experts in risk assessment and evaluation, and the regulatory mandates of national authorities. Up to 800 abstracts on biosafety will be prepared in 1995.

Proposed actions:

UNEP will continue to support the activities of the Working Group on Biotechnology Safety. In collaboration with the UNIDO/UNEP/WHO/FAO Working Group on Biotechnology Safety and other international and regional partners, UNEP will support the establishment of an International Register of Genetically Engineered Organisms which would contain information on the numbers and kinds of organisms modified, the methods used, the purpose of the modification, the organization responsible and biosafety considerations.

3.5.4 International technical guidelines on biosafety

The issue of biosafety has emerged as one of the most critical themes in the implementation of the CBD as well as Chapter 16 Agenda 21. While Governments agree that biotechnology development is an essential aspect of growth and international trade, they are equally concerned about the risks associated with the possible release of GMOs into the environment. In this regard, efforts are underway to consider the need for a protocol on biosafety under the auspices of the CBD. This effort can benefit from on-going efforts at UNEP to develop international technical guidelines on biosafety.

UNEP will continue to support the activities of the Working Group on Biotechnology Safety.

Proposed actions:

As a contribution to the implementation of Agenda 21 (Chapter 16) and in support of the CBD, UNEP will sponsor a meeting of government-designated experts to review international technical guidelines on biosafety, preceded by regional consultations. UNEP has already been carrying out regional consultations to review the proposed guidelines. The outcomes of these consultations and a meeting of government-designated experts organized to review the draft international technical guidelines on biosafety will be made available to the COP of the CBD at its next meeting. If requested by the COP, UNEP will consider follow-up support, particularly for national capacity building related to the implementation of the guidelines.

3.5.5 Fair and equitable sharing of benefits of biodiversity utilization

The area of the fair and equitable sharing of the benefits of biodiversity utilization is a critical aspect of the CBD. Little is known about how such sharing could be done and it is important for UNEP to assist Governments in formulating relevant and appropriate policies that promote this objective of the CBD. In order to promote this objective, UNEP and the COP of the CBD will need to develop effective ways of fostering cooperation between the private sector and public institutions in the developing countries.

Proposed actions:

UNEP will support policy studies on the fair and equitable sharing of biological resources and the benefits which they generate, taking into account issues such as access to genetic resources, access to technology and technology transfer, the collective knowledge and innovations of indigenous people and the rights of farmers.

UNEP, in cooperation with other relevant agencies, will document and disseminate information on cases studies and experiences of successful efforts to promote the fair and equitable sharing of the benefits of biodiversity utilization. Such experiences could form the basis for the formulation of guidelines of promoting the CBD objective.

UNEP, in cooperation with the CBD Secretariat and other UN agencies will seek ways of promoting the participation of the private sector in the implementation of the CBD. Initially, this will involve consultation

BOX 16. UNEP spearhead worldwide consultations on biosafety

Chapter 16 of Agenda 21 on "Environmentally Sound Management of Biotechnology" recognizes that the community at large can only benefit maximally from the potentials of Biotechnology if it is developed and applied judiciously in order to avoid to the extent possible negative side effects that have diminished the potentials of many new technologies in the past. It highlighted the need for internationally agreed principles as a basis for guidelines to be applied for safety in biotechnology.

The biosafety issue s also considered within the framework of the CBD in Articles 19(3) and 8(g). Article 19(g) calls upon the Parties to the Convention to consider the need for and modalities of a protocol for a safe transfer, handling and use of any living modified organisms resulting from biotechnology that may have adverse effect on the conservation and sustainable use of biological diversity. Article 8(g) calls upon the Parties to establish or maintain means to regulate, manage or control the risks associated with the use and release of living modified organisms resulting from biotechnology which are likely to have adverse impacts on the conservation and sustainable use of biological diversity.

As a follow up to some of the actions called for in Chapter 16 of Agenda 21 and in support of the work undertaken by the COP of the CBD to consider the need for and modalities of a protocol on a safe transfer, handling and use of living modified organisms resulting from biotechnology that may have adverse effects on the conservation and sustainable use of biological diversity a draft International Technical Guidelines for safety in Biotechnology with specific attention to the needs at the national, regional and international level; regional and international cooperation and harmonization; and, related capacity building requirements are compiled by the Departments of the Environment UK and the Netherlands in collaboration with UNEP and other relevant institutions. They were compiled on the basis of common elements and principles derived from existing instruments, regulations and guidelines.

To further build and develop consensus on the guidelines and relevant aspects of safety in biotechnology taking into account the need to avoid prejudging the consideration, initiated by the COP of CBD, on the need for, and the modalities of a protocol on biosafety, UNEP in cooperation with the Secretariat of the CBD hosted six regional and sub-regional consultations on government-designated experts to review the draft Guidelines; one for Central America from 1-3 March 1995 in San Jose, Costa Rica; the second for the South Asia and Pacific region from 8-10 march in Bangkok, Thailand; the third for Western Asia from 25-27 April 1995 in Amman, Jordan; the fourth for South America and the Caribbean from 28-30 June in Buenos Aires, Argentina; the fifth for Western Europe and North America from 5-7 July in Geneva; and, the sixth for Africa from 10-12 July in Cairo, Egypt. Government-designated experts from 63 countries participated in these regional consultations. The last regional consultation is planned for Central and Eastern Europe in September 1995 with an apex global consultation expected to take place after the second meeting of the COP of the CBD.

The participants at the regional consultations recommended that the results of those consultations be presented to the meeting of the Open-ended *ad- hoc* Group of Experts on Biosafety to be held in Madrid from 24-28 July as well as to the second meeting of the Conference of the Parties to the Convention on Biological Diversity.

In its decision 18/36 B of the UNEP Governing Council at its 18th session last May welcomed and noted with appreciation the UNEP's initiative to hold such consultations on the Guidelines and related capacity building requirements. It affirmed the desirability of the UNEP contributing to international efforts in biosafety while avoiding duplication with other international activities currently being undertaken by other organizations, in particular the work initiated by the COP of the CBD.

The draft international technical guidelines as an initial framework paper for discussion will be revised and refined in accordance with the regional and global consultations. The final draft Guidelines developed through the proposed regional and global consultations will be such that they can be implemented and/or complemented by using existing structures and measures, or by introducing new ones. Through this initiative, UNEP is plans to initiate a follow-up activity to support capacity building at the national level.

with the private sector to identify modalities for effective cooperation. A possible action is a series of regional consultations at which the private sector will express their views on the CBD.

3.6 Capacity building and human resource development

Capacity building and human resource development is a cross-cutting strategic action found in the majority of UNEP's biodiversity projects. The actions described below relate to projects that are dedicated exclusively to capacity building and human resource development. The theme of capacity development is considered essential for all the work of UNEP. The organization will work with institutions such UNDP in ensuring that capacity building is effectively integrated into all biodiversity projects.

UNEP has supported the development of education on biodiversity, in all its aspects, at the primary, secondary and university levels. Under the UNEP/UNESCO International Environmental Education Programme, formal school and university education, including biodiversity, has been promoted for several years. Although formal education is not one of the strategic actions commonly found throughout the range of UNEP's biodiversity projects, it features in some of UNEP's projects.

The *Global Biodiversity Strategy* and other strategy papers have noted the importance of training more taxonomists and stimulating taxonomic research as essential tools for the design and implementation of biodiversity management programmes. Very little training has been provided in this area. UNEP has begun to address this problem and will be supporting a three month training programme for candidates from developing and developed countries through the School of Plant Sciences of the University of Reading in the UK.

In addition to technical training, there is an urgent need to capacity building in the field of environmental policy analysis to complement UNEP's efforts in environmental law. This is particular important because most developing countries lack the capacity to carry out policy analysis on how to integrate environmental considerations into domestic policies. The increase in the number of international agreements requiring national action has increased the demand for policy analysis. UNEP staff already cooperate institutions such as ACTS which have refocussed their programmes to focus on building capacity in environmental policy analysis.

Proposed actions:

UNEP will continue to support the training of taxonomists. In consultation with scientific instututions, UNEP will design a project for training specialists in systematic biology for identifying priority protectable areas that enclose viable populations of high numbers of species. This training will include instruction on the application of technologies from molecular genetics such as DNA sequencing technology which can be utilized as diagnostic and prescriptive tools for the natural resource decision-maker and manager.

These technologies generate molecular data that provide a level of discrimination not generally available from more traditional systematic methods, such as taxonomy, and can be employed for planning biodiversity conservation programmes in three ways: (a) the identification of genetically unique populations; (b) the identification of populations with reduced genetic diversity whose capacity to respond to environmental change may be thereby impaired, and; (c) the determination of genetic characteristics of populations that are vulnerable to extinction.

Recent research has documented genetic divergence between geographical populations of tropical birds that significantly exceeds that observed between many species of temperate birds. These genetic data suggest that the current taxonomy of tropical species severely underestimates the diversity that exists beneath the species designation. The overall benefit of a systematics approach, based on new molecular technologies and a historical biogeographical appraisal, is that it is much more accurate in developing priority lists of habitats and ecosystems required for the preservation of biodiversity.

UNEP will study the feasibility of establishing a specialized capacity building and graduate level education project in biodiversity for developing countries. Human resource development is a top priority for improving conservation and sustainable use of biodiversity in the developing world. The project will be broad enough to permit the training of public and private sector professionals, as well as to support graduate students in biodiversity, including biotechnology, and related sciences.

UNEP will work with other institutions in supporting efforts to build capacity in environmental policy analysis in the developing countries. For more effective implementation of this action, UNEP will support initiatives aimed at developing the capacity to train policy analysts in the developing countries.

3.7 Raising public awareness and disseminating information

Raising public awareness and disseminating information are key tools in catalyzing action for biodiversity conservation. UNEP will continue to enhance its activities in this field by integrating biodiversity considerations in its public awareness and information dissemination activities. In addition, UNEP will also look into the possibilities of using new information technologies to promote awareness through electronic networks.

Proposed actions:

In order to raise public awareness and disseminate information, UNEP will under take a number of activities, particularly to: (a) train journalists on how to cover biodiversity-related events. This is particularly important because the loss of species is a subtle process that does not normally evoke public interest like other dramatic events; (b) providing biodiversity information to the youth will be undertaken by UNEP through a series of workshops for youth leaders at the UNEP Global and Regional Youth Forums and the International Children's conferences; (c) produce new video and films on biodiversity issues in cooperation with other orgnizations; (d) carry special supplements, sections and articles on biodiversity in *Our Planet*; (e) focus one of the future World Environment Days on biodiversity issues, and; (f) organize and International Photo Competition and mount a traveling photo exhibition on biodiversity.

BOX 17. Raising public awareness on biodiversity

UNEP has considerable experience in organizing public and media campaigns on various issues related to biodiversity. Together with IUCN and WWF, UNEP organized the launching of *Caring for Earth* in 1991. Other UNEP-organized launches have also highlighted biodiversity issues. For example, *The World Environment, 1972-1992* which launched in 1992 contains sections on biodiversity. Other activities such as the International Photo Competition which have attracted over 80,000 photos from more than 150 countries have also prominently featured biodiversity issues. By publishing a book of photos, calendars and organizing traveling photo exhibitions in many countries, UNEP has contributed significantly to raising awareness and disseminating information on biodiversity.

UNEP continues to work closely with the media in raising awareness on biodiversity. A media kit on biodiversity was published in 1991 and was widely distributed to journalists, mainly in the developing countries. Biodiversity issues have been addressed in a series of workshops for journalists organized by UNEP and its regional offices in Africa, Asia and the Pacific, West Asia and East Europe. Numerous press releases, fact sheets and features on UNEP's activities and the CBD have been produced and disseminated worldwide.

Media interviews and press conferences on biodiversity have been organized for senior UNEP officials. Special radio programmes on biodiversity have also been prepared and aired in many developing countries and by the UN Radio worldwide. A special issues of the UNEP magazine, *Our Planet*, was issued in 1994 in five languages and distributed worldwide. In addition, UNEP has also produced films on biodiversity including "The Burning Library" (with TVE) and "The Biodiversity" in cooperation with the Russian studio, Mercury.

UNEP in cooperation with the Smithsonian Institution organized an exhibit on UNEP biodiversity activities and displayed posters. Other biodiversity posters have also been produced through UNEP units. Biodiversity issues have also been incorporated into UNEP's initiatives on sports and environment.

4. THE IMPLEMENTATION STRATEGY

4.1 Setting priorities

In consultation with the Executive Director's Advisory Panel of Biodiversity Experts, at its First Meeting from 2–4 November 1994 in Nairobi, the proposed actions of the BPIS were divided into high and medium priority actions. It should be noted, however, that all were considered important. The following criteria were used in rating the proposed actions: (a) the overall technical importance for conservation and sustainable use of biodiversity, (b) the political importance assigned to the issue by Governments; (c) the degree of innovativeness and newness; (d) the importance of the role to be played by UNEP and (e) the importance of action catalyzed by UNEP.

BOX 18. Priority actions

High priority actions

1. Support to international agreements on biodiversity
2. International trade and biodiversity
3. Sharing of benefits derived from biodiversity
4. Training in biosafety
5. Global biodiversity assessment and monitoring
6. Economic policy instruments for biodiversity management
7. Pilot projects on sustainable use of biodiversity
8. Country studies, strategies and action plans, inventories, assessments, monitoring and data management
9. Global Biodiversity Assessment project
10. Management-oriented, problem-focused research
11. Capacity building and human resource development
12. Raising public awareness
13. Marine Mammal Action Plan
14. International Coral Reef Initiative
15. Regional Seas Protocols concerning Specially Protected Areas and Wildlife (SPAWs)
16. Biodiversity Strategy for Small Island Developing States
17. Global assessment of freshwater living resources
18. Integration of Biodiversity components into action plans for international watersheds
19. Pilot projects on the sustainable use of biodiversity in the management of mountain and fragile dryland ecosystems
20. Animal genetic resources

Medium priority actions

1. Synergy mechanism on biodiversity-related conventions
2. International technical guidelines on biosafety
3. Impact assessments of development on biodiversity
4. Inventory, development and transference of biotechnology capabilities
5. Wetlands management
6. Action Plan for Freshwater Mammals
7. Wildlife and protected areas
8. Elephant and Rhinoceros Facility
9. MIRCENs
10. Plant genetic resources
11. On-going actions in animal genetic resources

The application of the third criteria tended to relegate many on-going activities to a second order of importance. The fourth criteria weighed heavily, since it was felt that greater emphasis should be given to actions where the role of UNEP was essential, especially in those cases in which minor activity was being generated from other United Nations organizations. The high and medium priority proposed actions are presented in the following two tables. Actions related to GEF operational strategies are not included.

4.2 Cross-cutting strategic actions

To fulfill its role as a catalytic agency promoting the formulation and implementation of biodiversity management as an integral element of sustainable development, there are seven strategic cross-cutting actions that should be built into UNEP's biodiversity projects, whenever possible, at the regional, sub-regional and national levels. These cross-cutting strategic actions represent themes that are essential for the successful implementation of the specific actions outlined in the strategy. The strategic actions also represent UNEP's areas of strengthen as well as its overall emphasis in the implementation of its activities. In addition, UNEP is internationally recognized for its excellence in some of the these strategic actions and promotes them in other initiatives such as GEF.

4.2.1 Carrying out research, assessment and monitoring

For projects to be effectively focused, particularly those supporting the preparation and implementation of action plans for the management and sustainable use of biodiversity, they must be based on sound research, assessment and monitoring in support of project objectives and outputs. If problems are incorrectly assessed, studied and monitored, corrective measures will fail. In this regard, UNEP will put emphasis on promoting the use research results as well as assessments and monitoring in biodiversity activities. These actions are critical for biodiversity because of limited information available in this field that can be effectively used in project planning.

One of the most important functions of UNEP has been to bring scientific analysis into the political process.

4.2.2 Building scientific and political consensus

One of the most important functions of UNEP has been to bring scientific analysis into the political process. This process has often involved first securing consensus among scientists on particular issues, many of which are controversial. One the basis of the consensus secured, UNEP has effectively sought to build political consensus and to secure the agreements needed for global, regional and national action. It is through such consensus-building that the international community has been able to reach agreement on a number of issues and to initiate action even where full scientific evidence was not available.

In this regard, consensus-building has been an important aspect of the application of the precautionary principles to environmental action. UNEP will continue to pursue these approaches and will promote other activities such as conflict settlement which have become an essential aspect of environmental management at the global, regional and national levels. The use processes such as the one utilized in the preparation of the GBA will be critical to building scientific and political consensus.

4.2.3 Developing policies and environmental legislation

The efficient and effective implementation of biodiversity management and sustainable use actions at the country level require the development of appropriate national policy frameworks, institutional mandates and supportive national legislation. These will be fundamental elements for the preparation and implementation of national, binational and multi-national biodiversity strategies and action plans, including special management projects. The provision of technical cooperation in the elaboration of national legislation, when requested by Governments, is especially important, since, without consideration of compliance, legal guarantees and enforcement, environmental mandates will go unheeded.

BOX 19. Building scientific consensus: the case of the Global Biodiversity Assessment

The aim of the Global Biodiversity Assessment (GBA) is to provide an independent peer-reviewed, scientific analysis of the current issues, theories and views, regarding the main global aspects of biodiversity. It reviews the current state of the knowledge, identified gaps, focuses on critical scientific issues, and draws attention to those issues where scientists have reached a consensus and to those where uncertainty has led to conflicting view points and therefore a need for further research. The main biodiversity issues covered by the GBA are: characterization, origins, dynamics, magnitude and distribution; ecosystem functions; multiple values; human influences; monitoring, conservation and sustainable use; biotechnology; and data management and communication. The GBA will constitute an important basis for decision-making to help meet the objectives of the CBD and will be a useful source of information for the Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA).

GBA was endorsed by the Global Environment Facility (GEF) in Abidjan in 1992. A Preparatory Group for the Global Biodiversity Assessment was convened by UNEP in Montreal, Canada in 1993. In May 1993 UNEP formally approved the GBA project based on the objectives and preliminary outline developed by the Preparatory Group. The first meeting of the Steering Group was held in Trondheim, Norway, later that month. The Steering Group reviewed the policy to be adopted in preparing for the assessment and approved a draft list of contents.

Due to the complexity of the issues addressed by the GBA, 12 teams of experts were established, each with up to four Coordinators and Lead of Contributing Authors from over 51 countries. There was a broad geographical balance in Coordinators and authors, and balanced representation of developing and developed countries. Each team met in one or more workshops to plan and write each chapter. The draft report was submitted to extensive peer review: more than 1,100 experts from more than 80 countries were asked to provide comments, and more than 300 written submissions were received. The GBA, including the Summary for Policy-Makers, was then subjected to a more comprehensive review at a workshop in Panama inJune1995.

Although GBA did not involve governmental representation, governments were asked to nominate experts to review the first draft in their private capacity, and such nominations were received from over 50 governments. An advance copy of the GBA was submitted to the Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA) of the CBD for use as a background document.

The output of the GBA will go beyond the published results because it has brought a wide range of scientists together in a consensus-building process which in itself will help focus future scientific work and support the implementation of political agreements.

4.2.4 Integrating environmental economics into biodiversity management

As long as economic tools for biodiversity management and sustainable use are inadequately developed and applied, the management and sustainable use of biodiversity will be seriously hampered. In the wider picture, biodiversity is economically very important. Unfortunately, the greater part of biodiversity projects effectively ignore economic considerations. All UNEP projects promoting the integrated management and sustainable development of biodiversity in the field must incorporate the elaboration and application of methodologies and tools for understanding the economics of biodiversity and for improving its management.

4.2.5 Supporting the participation of local communities, major groups and NGOs

UNEP biodiversity projects should not stop at capacity building and institutional strengthening. Concrete actions for the integrated management and sustainable use of biodiversity must involve local communities, major groups and NGOs. Local participation is essential if attitudes and perceptions are to be favourably altered on the ground. The Cajamarca pilot project which generated clearly discernible benefits, is an outstanding example of catalyzing local development and changing attitudes through local community involvement and participation. Particular attention will be paid to the role of women while designing and implementing biodiversity projects. This is because women are play the role of environmental managers in most of the developing world and are the custodians of much of the indigenous knowledge needed for the effective design and implementation of biodiversity conservation projects.

4.2.6 Building capacity and strengthening institutions

A principle objective of the greater majority of UNEP's biodiversity projects is to strengthen the capacity and institutional infrastructure of countries for managing and using more efficiently and effectively their

biodiversity. Under the framework of the BPIS, this strategic action will focus on: (a) strengthening institutional capabilities in policy-making, information management, assessment and planning; (b) training and education of scientific, technical and managerial personnel; and (c) facilitating access to and transference of technologies.

There are critical areas where overall capacity building is urgently needed. These include strategy planning, sustainable utilization of biodiversity, economic instruments for biodiversity management, biotechnology research and development, intellectual property issues, application of environmentally sound biotechnologies, biosafety, know-how on new technologies, biodiversity assessment, integrated information management, and management of *ex situ* genetic resources. UNEP will be expected to take the lead in capacity building related to issues that are at the cutting edge of biodiversity conservation and management. Equally important is the area of environmental policy analysis related to biodiversity and biotechnology.

Closer collaboration will be encouraged with UNDP and its Capacity 21 initiative, as well as with other partner organizations.

4.2.7 Raising public awareness and disseminating information

Greater understanding of the importance of biodiversity to the health of this planet and as a vital resource for the future of humanity will enhance the implementation of effective biodiversity management programmes and action plans, particularly at the local and national levels. In its projects, UNEP must continue to actively promote public awareness of issues at the global and national levels through media campaigns, production and distribution of printed and audio-visual information, outreach activities and the organization of international environmental campaigns. It is important that successful projects adequately publicize achievements and disseminate information on major outputs and results.

4.3 Consultations

4.3.1 The Executive Director's Advisory Panel of Biodiversity Experts

Inaugurated in November 1994, this high-level Advisory Panel of Biodiversity Experts is advising the Executive Director of UNEP on the work to be undertaken in the field of biodiversity and will identify those areas which require specific attention. In doing so, it will review progress in the implementation of the BPIS. The Advisory Panel is also expected to play a major role in advising the Executive Director on new and emerging issues in the field of biodiversity, and will be consulted periodically on special issues and problems that will be addressed by the organization.

The Advisory Panel has the following functions: (a) to advise the Executive Director of UNEP on the work to be undertaken in the field of biodiversity and will identify those areas which require specific attention; (b) to review progress in the implementation of the BPIS; and (c) advise the Executive Director on new and emerging issues in the field of biodiversity, as well as on special issues and problems being addressed by the organization.

The Advisory Panel will be convened as required. It holds its regular annual meetings immediately following the Annual Biodiversity Programme Review in November.

4.3.2 Consultations at the local and national level

For effective design of and follow-up to initiatives such as *Caring for the Earth* and the *Global Biodiversity Strategy*, it is vitally important for UNEP to keep in touch with the people that are involved in the conservation and management of biodiversity at the local and national level. It is the people working on the ground, both in the public and private

sectors, in decision-making, resource management, education, research, industry, and local community organization, to mention a few, that are at the front line of protecting biodiversity and promoting its sustainable utilization.

Consultation mechanisms such as the Global Biodiversity Forum, under the aegis of the joint IUCN/WRI/UNEP Biodiversity Programme, will be maintained to ensure that the views of these important players are taken into account in the formulation and evaluation of activities covering different aspects of biodiversity management. Conceived during the preparation of the *Global Biodiversity Strategy*, The Global Biodiversity Forum offers an independent, open process to promote analysis and free dialogue that addresses the key ecological, economic, institutional and social issues related to biodiversity, which complements the intergovernmental process with independent views and recommendations.

4.4 Interagency cooperation

In continuation of its catalytic role, UNEP will support the development of joint collaborative programmes and projects to promote the conservation, integrated management and sustainable utilization of biodiversity with organizations within and outside the UN system. The multidisciplinary, multi-sectoral nature of biodiversity requires cooperation across a broad spectrum of global, regional, sub-regional and national organizations.

4.4.1 Reporting to the Commission on Sustainable Development

The Commission on Sustainable Development (CSD) is charged with ensuring an effective follow-up of the decisions of the United Nations Conference on Environment and Development and with monitoring progress in the implementation of Agenda 21 at the national, regional and international levels. The Division for Sustainable Development of the Department for Policy Coordination and Sustainable Development (DPCSD) serves as the secretariat of the CSD.

As the lead entity responsible for promoting the implementation of actions adopted in Chapter 15 on the Conservation of Biological Diversity of Agenda 21, UNEP will play an important role in reporting to the Commission on developments in the field of biodiversity throughout the UN System.

As Task Manager for Chapter 15, UNEP prepared a report on the activities undertaken by the United Nations system in biodiversity for the Inter-agency Committee on Sustainable Development (IACSD). It was a contribution to the UN Secretary General's report to CSD in 1995. In its role as Task Manager for Chapter 15, UNEP will be at the cutting edge of developments in biodiversity management. It should be at the forefront of articulating new initiatives promoting the implementation of actions in the field of biodiversity in Agenda

21, particularly as regards policy formulation, both within and outside the UN system. In its reporting obligations to the CSD, it should also continue to strengthen its role of evaluating progress and advances in biodiversity management at the national and international levels. This will require enhancing the effectiveness of the organization's monitoring and evaluation approach.

Because the BPIS is multi-sectoral and multidisciplinary, it can help the CSD in addressing interlinkages between biodiversity and other land resource issues. With this spirit, a UNEP position paper on interlinkages was prepared in October 1994 for consideration by the CSD, which addressed possible coordination of cross-sectoral policy approaches in Agenda 21 related to biodiversity and other natural resources.

In carrying out its reporting function, UNEP will also direct its attention at assisting the CSD addressed economic policies for biodiversity in three areas: (a) financial resources and mechanisms; (b) trade and sustainable development and; (c) consumption patterns. The latter is an especially difficult issue which requires greater attention. As one of the implementing agencies of GEF, it is in a favourable position to contribute to this process.

4.4.2 Reforging partnerships

The implementation of the BPIS will require the strengthening of a collaborative network comprised of UN agencies, scientific institutions, other centres of excellence, regional bodies, and non-governmental organizations, among others. Guidance will continue to be provided by Government-designated experts who will also participate in the review of outputs. Implementation will be effected through the following mechanisms: (a) establishment of working groups; (b) the undertaking of peer reviews: (c) initiation and support of studies; (d) promotion of case studies and pilot projects in selected countries; (e) dissemination of knowledge and information, regional training, and (f) assistance to countries in the formulation of GEF projects.

Existing partnerships with key organizations such as FAO, UNESCO, WRI, IUCN, WWF, WCMC and SCOPE will be strengthened with a view to addressing pressing problems and issues in the field of biodiversity in a coordinated and integrated manner. Relevant existing projects will be maintained, but they will be revised to respond to the priority needs of biodiversity management identified in this document. This will require a careful re-examination of projects initiated jointly by UNEP with partner agencies and organizations before UNCED. In particular, international and environmental education and training projects must incorporate activities oriented to strengthening national capacity in areas such as biosafety, biotechnology, intellectual property issues and sustainable utilization of biodiversity.

These, of course, will require that the strategic views of partner UN agencies and other cooperating agencies be sought, particularly as regards biodiversity initiatives which they are proposing.

The complexity and magnitude of biodiversity problems and issues requires UNEP to forge new partnerships with centres of excellence, including international, regional, sub-regional and national organizations. Cutting edge projects in biodiversity and biotechnology have been initiated with centres such as the Smithsonian Tropical Research Institute in Panama, Kenya National Museums, WCMC and the International Academy of the Environment in Switzerland.

In the BPIS, UNEP is strongly committed to working closely with centres of excellence in the developing world. For example, new alliances have been recently shaped with regional bodies such as the Department of Regional Development and Environment of the General Secretariat of the OAS in the integration of biodiversity management programmes in sub-regional sustainable development action plans. Not only do these organizations bring to bear their substantial expertise in the field, but they also provide significant funding to the projects themselves.

Since UNCED, the global institutional terrain for the generation of knowledge has considerably changed and UNEP will seek to identify the new loci of knowledge creation and start to forge new alliances. The rise of

non-governmental research institutions in the developing countries, for example, offer UNEP will new opportunities for leverage knowledge for regional action. Environmental research is also being enhanced in more established research institutions such as the member agencies of the Consultative Group on International Agricultural Research (CGIAR). In addition, much relevant scientific knowledge, especially in the field of biotechnology, is now being generation by the private sector. UNEP will identify the now sources of scientific knowledge and seek collaboration with the relevant institutions. International networks and scientific associations are also important sources of scientific knowledge. UNEP will strengthen its relationship with institutions such as the International Council of Scientific Unions (ICSU) and its various constituent members.

4.4.3 The Ecosystem Conservation Group

Effective partnerships require joint thematic programming with partners. The Ecosystems Conservation Group (ECG), consisting of UNEP, FAO, UNESCO, UNDP, IUCN, the World Wide Fund for Nature (WWF) and the International Plant Genetic Resources Institute (IPGRI) as full members, and the World Bank, WRI, WCMC and others as observers, with UNEP providing secretariat services, was established in 1975 as a forum for major international organizations dealing with problems of nature conservation and natural resources management. The work of the ECG will be revitalized and expanded into a forum for joint thematic programming in the field of biodiversity.

The ECG is the most effective vehicle for carrying out joint thematic programming for the projects and activities of the BPIS. It is a forum for the purpose of promoting, coordinating and harmonizing the policies and activities of its members in the field of ecosystem conservation. However, for it to function more effectively, the ECG needs to be convened at a more senior level, particularly by member UN agencies.

As the Secretariat for the ECG, UNEP will take the lead in promoting closer cooperation on biodiversity issues among the member agencies. Joint thematic programming will be carried out at the regional level in order to enhance programme and project delivery at the regional, sub-regional and national levels. This activity will be carried out by UNEP's Regional Offices in collaboration with the Regional Commissions of the United Nations and the participation of leading IGOs, centres of excellence and NGOs in the respective regions. This exercise will be closely coordinated with IUCN which has a number of regional offices. The IUCN regional offices could serve as links between UNEP and IUCN membership in the respective regions, which

include both governmental and non-governmental organizations.

4.5 Regional delivery

UNEP will play an increased role in catalyzing and promoting regional cooperation on transboundary ecosystems, cross-border influences and impacts on biodiversity, and other related regional concerns. Activities such as the provision of technical cooperation advisory services, the monitoring of changes in biodiversity, and information exchange can also be managed more efficiently at the regional level.

In line with the agency's policy of giving greater emphasis to overall programme delivery at the regional level, UNEP's regional offices will be expected to play an increasing role in the coordination and monitoring of biodiversity projects implemented in the respective regions. They are better placed for assessing the needs of their regions and for organizing joint thematic exercises with major regional and sub-regional partners as well as national focal points. To ensure that adequate consideration has been given to political realities and government-perceived needs, all projects should be cleared by the regional offices before final approval. This, of course, implies that the regional offices will be required to have a focal point with expertise in biodiversity.

For regional delivery to be effective, much greater feedback on regional needs and priorities is required. Regional Biodiversity Task Forces should be organized by UNEP's regional offices for this purpose. Members could include representatives of leading IGOs, centres of excellence and NGOs, including key partner agencies, in biodiversity in the respective regions.

4.6 Integrated information management

An important element of the BPIS will be the establishment of an Integrated Information System on UNEP biodiversity projects and activities which will have the following functions: support reporting on the BPIS, serve as a central point for dissemination of information generated by projects, and ensure the exchange of technical information between related projects, particularly those developed in different sub-programmes. The following example best illustrates the benefits that can result from improved integrated management of information.

UNEP's Water sub-programme is currently launching a project for the preparation of an Integrated Environmental Management Programme for the Lake Titicaca, Desaguadero River, Lake Poopó and Coípasa Salt Lake closed basin system between Bolivia and Peru. The programme will include elements on sustainable utilization of biodiversity for agriculture, fishing, agroforestry, reforestation and land rehabilitation. From 1985 to 1994, TEB with funds from Germany through the Clearing-house supported a pilot project in Cajamarca, Peru on the integrated management of Andean ecosystems which successfully promoted among local communities the sustainable utilization of biodiversity for agriculture, agroforestry, reforestation, land rehabilitation and health. The Lake Titicaca project would benefit greatly from the wealth of information and experiences in common areas generated by the Cajamarca project. Moreover, unnecessary duplication would be avoided and funds used more effectively in support of other project activities.

Greater attention will also be given by UNEP to integrating the data which it generates with other sources such as the IUCN networks and the NGO community. To this end, WCMC could provide valuable data management assistance and networking capabilities. This was one of the reasons behind the creation of the Centre.

UNEP holds considerable information resources which can be used to support the BPIS. Of particular importance is the UNEP Library which hold one of the best collections in the world on environmental issues. This resource could be used to attract visiting scholars and researchers to spend time at UNEP and interact with the staff of the institution. The Integrated Information

System will use the UNEP Library is one of its important components with the aim of developing it as an internationally-recognized source of information on biodiversity.

In addition to the UNEP Library, UNEP's Information and Public Affairs (IPA) unit can be an important source of information on biodiversity. Already, IPA receives and responds to a wide range of queries related to biodiversity. However, IPA has not been able to keep track of all the biodiversity-related activities being undertaken by UNEP. One of the ways of achieving this is to ensure that the UNEP Editorial Committee performs the appropriate role of facilitating a query-response service.

4.7 Programme implementation and follow-up

The success of the BPIS requires improved monitoring and evaluation of projects, as well as a more effective and efficient coordination of the sub-programmes and respective management units which will participate in the implementation of this initiative. Enhanced programme execution and follow-up will be based on three key activities: (a) project and programme monitoring; (b) dissemination and exchange of information; and (c) sharing of experiences.

The first of these activities and parts of the other two are the responsibility of the Corporate Planning and Accountability Service (CPAS). Created in February 1994, the CPAS fulfills the central strategic planning and management advisory role of the agency. Its functions include, among others: (a) advising managers on assessment, project development and approval, budgeting and use of resources, and monitoring and evaluation; (b) identifying and encouraging better practices in programme delivery; (c) analyzing and recommending improvement in information and administrative support systems; and (d) streamlining UNEP's reporting, monitoring and evaluation processes, and integrating them within programme delivery.

Additional actions on the dissemination and exchange of information and the sharing of experiences for optimizing the use of project outputs are treated in the following point.

4.8 Deployment of resources

4.8.1 The Environment Fund

The Governing Council of UNEP approved the 1996-79 budget with substantial allocations for biodiversity conservation. The funds are designated under a programme element on "Caring for Biological Resources" as well as embedded in other programme areas. The Governing Council approved US$7,202,000 for the programme element on "caring for Biological Resources". An additional US$1,929,000 is allocated to the Global Freshwater Assessment which will also cover biodiversity issues. Another US$1,54,000 is available for diagnostic studies of slected international basins in developing regions, including plans for their management. The studies will cover biodiversity issues. Another source of support for biodiversity management is the US$3,375,000 allocated for watershed an coastal zone integration activities. Support for biodiversity activities will also come from programmes dealing with land resources, environmental law, coordination of environmental convention secretariat, and trade and environment.

4.8.2 The Clearing-house

The Clearing-house offers additional funding over what is provided by the Environment Fund, especially for projects which are field oriented and implemented at the national level. Its potential is yet to be fully realized. With a coherent programme in biodiversity, UNEP through its Clearing-house mechanism is in a more favourable position for attracting the support of bilateral donors, particularly for projects which include capacity building components.

Projects funded through bilateral technical cooperation trust funds can benefit from a multiplying effect in resources, since successful projects can attract additional funding from the initial donor as well as new bilateral donors. Where centres of excellence are the implementing organizations, prospects for attracting private sector funding are greatly enhanced.

The Assessment of Biodiversity and Microclimate of the Tropical Forest Canopy project clearly demonstrates the catalytic role

which UNEP can play through its Clearing-house. The BPIS proposes utilizing this model of bringing together centres of excellence, bilateral donors and private sector donors in promoting and developing key, field-oriented biodiversity projects. The Clearing-house unit will be more actively involved in the development and promotion of the BPIS by exploring new and innovative sources of funding.

The role of the Clearing-house as a key facilitator in the funding of country-level biodiversity projects will be strengthened. The BPIS will be the framework which the Clearing-house will utilize in approaching donors for funding priority activities within the BPIS.

In studying the feasibility of establishing a specialized capacity building and graduate level education project in biodiversity for developing countries, consideration will be given to the creation of a major trust fund under the Clearing-house. Consultations will be required with the principal Clearing-house donors.

4.8.3 UNEP's role in GEF

For 1995 alone, US$220-260 million was made available through GEF for funding (a) enabling activities under climate change and biodiversity and (b) selected priority projects to benefit the focal areas of climate change, biodiversity and international waters. As the interim financial mechanism of the CBD, GEF will play a key role in financing the implementation of projects carried out under the Convention. The Conference of the Contracting Parties will determine the eligibility criteria for the funding of the Convention's programme priorities.

In the overall framework of GEF, UNEP will play an important role

BOX 20. Clearing-house projects

Several biodiversity projects are funded through the Clearing-house. In Africa, these include support to the preparation of the National Environmental Action Plan of Swaziland, including a component on the conservation of natural resources and biodiversity, also funded by the Finnish Trust Fund; support to the development of a comprehensive national conservation strategy for Botswana, funded by the Government of Sweden, Norway/EU and IUCN, which was subsequently adopted by the Cabinet; preparation of an inventory of the natural resources of Guinea Bissau, with the support of the Finnish Technical Cooperation Trust Fund; and short term advisory services to Burundi in national parks management. Through the Clearing-house, funds from the Governments of Finland, Norway and Sweden were provided for the preparation of the Zambezi River Basin Action Plan, including the conservation of forests along the river. Eight African countries were involved in this initiative.

In Asia, the Clearing-house has assisted Indonesia in several important activities: the establishment of the Pulau Seribu Marine National Park for the protection of the coral islands of Jakarta Bay, integrated coastal zone development east and west of the Bay, and the preparation of manuals on integrated conservation management for training park managers. Assistance has also been provided to Vietnam for reviewing urgent environmental issues such as deforestation, destruction of watersheds and loss of biodiversity, with a view to initiating the preparation of a National Environmental Action Plan.

In Latin America, the Clearing-house financed the preparation of a report requested by the Government of Ecuador on the conservation of forests and the establishment of national parks in the Amazonian region of the country. The Programme for the Integrated Management of Andean Ecosystems in Cajamarca, Peru, funded by the Trust Fund of the Federal Republic of Germany from 1985 to 1993, has been one of UNEP's most successful projects. Implemented by the local government with the invaluable participation of the National University of Cajamarca, it has promoted the conservation and sustainable utilization of Andean species, including native agricultural crops, among the local indigenous population.

The Biological Diversity and Microclimate of the Tropical Forest Canopy project is an excellent model of a Clearing-house project. At first it was difficult to attract funding for the project. Following an aggressive promotion by the Clearing-house, initial funding was provided in 1991 by the Finnish Technical Cooperation Trust Fund to Assist Developing Countries to Meet Serious Environmental Problems. With the dissemination of the technical outputs of the project by the Clearing-house, the German Technical Cooperation Trust Fund for Activities in Developing Countries on Environmental Awareness and Machinery and the Norwegian Technical Cooperation Trust Fund became interested and donated the funds for the purchase of the crane. Total support from the three trusts funds amounted to US$285,258. STRI contributed with US$192,208 in-kind and in-cash support, largely in the form of scientific, technical and operational staff and for the purchase of equipment. Through STRI's efforts, private sector donors are providing the bulk of the funds for research, monitoring and training activities. US$413,000 alone have been contributed by four private sector donors: the Andrew Mellon Foundation, the US National Science Foundation, the Smithsonian Scholarly Studies Program and the Smithsonian National Associates. Furthermore, the Norwegian Science Institute signed a cooperation agreement with STRI by which Norwegian scientists financed by their Government begun to participate in the project in 1995.

providing guidance on technical aspects to be considered in the funding of biodiversity projects. Along with UNDP and the World Bank, UNEP is currently assisting the GEF Secretariat in the preparation of the GEF Operational Strategy on Biodiversity. UNEP will also be expected to continue to play an important role in providing scientific and technical inputs to GEF at all levels, including the review of funding proposals in the field of biodiversity. It also serves as the Secretariat of the Scientific and Technical Advisory Panel (STAP), the principal advisory body of GEF on scientific and technical aspects.

It is expected that in several areas the GEF Operational Strategy on Biodiversity and the BPIS will complement each other. Both stress the importance of strengthening the scientific and technical base for environmental management and sustainable development; national capacity building in assessment, monitoring, legislation and research; the transfer of environmentally sound technology; and the development and implementation of strategic national projects for the management and sustainable use of biodiversity.

Through the GEF Operational Strategy on Biodiversity, UNEP will play a major role in mobilizing funds for projects in support of the implementation of Agenda 21 and the CBD, particularly projects that provide technical assistance and investments for biodiversity conservation, management and sustainable utilization at the country level.

UNEP will also initiate and carry out projects which reinforce the ability of GEF to arrive at sound policy and operational decisions. Such projects will: (a) support the strategic objectives of the CBD; (b) enhance the ability of developing countries and countries with economies in transition to implement their Convention obligations through the preparation of national biodiversity strategies and action plans; (c) provide a more solid scientific and technical base in support of cost-effective, sustainable and high priority GEF biodiversity projects; (d) enhance the participation of developing countries and countries with economies in transition in scientific and technical assessments and monitoring activities; and (e) promote regional cooperation in biodiversity management and conservation.

The GBA and the BDM projects are examples of such projects. During the past three years, more than US$18 million have been raised from GEF and other donors for these kinds of biodiversity projects.

4.9 Evaluation

A review and evaluation of the BPIS will be held every year. The objectives of the programme review will be to: (a) assess the status of implementation of the BPIS, particularly as regards the success or failure to achieve the expected outputs and results; (b) identify factors affecting the achievement of expected outputs and results; (c) establish future priority targets (outputs and results) within the framework of the BPIS; (d) analyze budgetary implications for the future implementation of the revised BPIS and (e) identify ways and means for implementing the BPIS more efficiently and effectively.

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